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The Harveian Oration

ON

"INVENTIONS AND THE OUTLOOK IN NEUROLOGY"

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BY

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For us, his posterity, Harvey is the first to pick up the threads of experiment and observation begun by Galen in the correct deductions from his lesions of the spinal cord in frogs and rabbits, continued by Aristotle, and thereafter broken for 1,500 years, and he is styled the "Father of modern physiology." From the manner of his work in experiment and in observation of proofs he is the inventor of modern methods of research. From the law which he laid down of "Omne vivum ex ovo" he is the starting-point in the idea of evolution. From his inspired flight of thought expressed in the words "Epidemic, contagious, and pestilential diseases scatter their seeds and are propagated to a distance through the air and in hidden fashion silently multiply themselves by a kind of generation" he is the prophet of bacteriology to come. He is the discoverer of the circulation of the blood. To his colleagues and to his patients he was the "beloved physician," and in this College he receives homage upon each St. Luke's Day as its most illustrious Fellow.

Harvey's exhortation to us is "To search out and discover the secrets of Nature by experiment and observation." The first experiment is in a flight of thought; a wandering of the mind which begets a sudden new idea, a flinging away for the moment of all we have taken on trust as gospel, or sometimes an attempt to explain in words to others what we ourselves do not understand, has brought discovery. No one ever made successful experiment but he had already conceived that something would happen from it, nor an invention without the idea as to how it would work. However much Harvey may have denounced mere speculation in others, yet guided by his careful observation it was his primary method of work. He had, surely, a firm conviction that the blood did circulate, and in a certain way before he put his experiment into being. He had surely conceived that the "to and fro," "ebb and flow" movements of the blood, which had been gospel since the time of Galen, could not be, and was driven by dissatisfaction to make his great discovery.

There is no method in discovery; sometimes there appears to be a high element of fortunate chance. Great knowledge is not always essential; at times it seems a hindrance to personal progress, for much of a very wide knowledge is of necessity taken on trust without even reasonable personal analysis. A castle builded in the air by a highly knowledgeable fancy in the course of a week-end of leisure, and a lifelong plodding with microscope and stains, have both on occasion brought an equal advance in medicine, though the labour entailed in the two events is so unjustly different. It is remarkable that in former times, when knowledge of medicine was scant, the pioneers, in expressing their brief views upon physiology and disease, and particularly in teaching their pupils, gave explanations that would sum up in a nutshell our accepted knowledge of the present day after a century of discovery and proof. Such flights of thought, such lucky hits upon the real truth are, I submit, dismissed by posterity as dreams without discovery and without appreciation of their greatness. They are in reality potential discoveries not followed up, probably from lack of continuing interest, certainly from the lack of methods and of knowledge as to how to find proofs. In attempting to hold your interest upon inventions and their effect on the progress and present outlook in neurology, I shall draw your attention to several prophetic flights of thought, all of which were great, and some of which resulted in important advances in knowledge.

I have chosen the word "invention" as best fitting the bringing in of a new idea—an invention of the mind, which may prove to be a discovery of the truth or may fail as a false hypothesis—as well as the bringing in of a demonstrable fact or of a new method. Wonderful inventions for the study of the structure of the nervous system and tireless research have resulted in knowledge, practically complete, of the most intricate and marvellously beautiful network, with input paths leading from the outside world and output paths leading to the muscles for action, almost incredible in its extent, everywhere continuous, and so complicated that it is impossible to prove or to conceive how it works except in a few of its lower and grossly mechanical regions. This vast and solid edifice of proved knowledge of structure has added little to our knowledge of function and disease. But it is a very important little, for it is all we have, and it is concerned with the lower and more grossly mechanical regions of the spinal cord and brain stem. This quarry has been worked out, and labour in it has well-nigh ceased. Delving into the function of the nervous system by experiment has reached so high a refinement that the signals by which each part works can be made visible and audible. Always the same signals in every part alike, only more and more rapidly repeated as the message becomes stronger and more urgent, and the end-result of these fine labours is

some knowledge as to how the lower and simpler regions —namely, the spinal cord and the brain stem—work. To the greatest of living physiologists who has spent a long life in the experimental study of the nervous system, the Rede lecturer for last year, Sir Charles Sherrington, the highest and largest part of the nervous system, the brain, is still mainly a form and a series of events, and his ignorance of much of their relation bids him despair. Yet proclaiming himself an optimist, as opposed to a defeatist, he puts the question: "Will it ever be possible to understand the nervous system?"

In the recognition and distinction of the nervous diseases the past century has brought an ever-increasing and now almost complete knowledge, which does not yet, and will not, reach finality, for disease is subject to evolution and devolution and disappearance at least for a time. The causation of many of the diseases is now clear, and in recent years studies of biochemistry and virus infection have brought suggestions of what the future may discover in maladies of which we do not know the cause. Methods of treatment, though far behind those of diagnosis, are advancing, and at the moment we seem to be in possession of means of diagnosis and treatment which will surely remove the terrible diseases general paralysis and locomotor ataxy from the community. Yet the fact remains that the four most prevalent and relentless of the nervous diseases—disseminated sclerosis, progressive muscular atrophy, paralysis agitans, and most of the vascular diseases—come before us without any clue as to their cause, and without any means whatsoever of their prevention, nor even, as in the case of progressive muscular atrophy, of the slightest amelioration.

Cerebral Localization of Function

The means by which invention begins, the arousing of that lasting interest which does not rest until discovery is made, is often intangible and a thing perchance and of personality, but sometimes it has been recorded, and I may introduce the great discoveries in neurology with an instance. At the end of the eighteenth century a self-conscious lad pondered upon his disability promptly to answer in class the things he knew well, and concluded that it was because nature had not given him a fine forehead and prominent eyes. His interest in the brain and speech never thereafter left him. He became a very great anatomist of the nervous system, and he proved, by his dissection, the definite structural path from brain to muscle partly crossing in the medulla—the pyramidal path —and his proof was then and there accepted by the knowledgeable world for all time. Like Harvey, he was not the first to perceive this, but, like Harvey, he gave such proof of its truth that no one wished to deny it.

Gall's discovery of a definite pathway conveying movement from brain to muscle was the foundation of all subsequent work on the paths of function within the nervous system. In his early days he laid down the truest conception of the brain as the exclusive seat of the highest nervous functions only. By his conception of speech as a function of the forward part of the brain he was the originator of the idea of localization of function in the brain. It does not detract from the greatness of the discoveries of this remarkable man that he went over to phrenology and died discredited, torn from his high position by the prophetic denunciation of Flourens that there are no separate highest functions to be localized in the brain, but that all are interwoven. Round Gall's conception of cerebral localization such a war was raged during the nineteenth century—complete defeat at first, then, after years, complete triumph, and later, defeat not yet complete—as has stimulated more investigation and produced more useful discovery than any other event in the history of neurology. At the moment the localization of function in the brain is presumed by our physiologists, but admittedly without means of scientific proof. The only proved localization of function is that of the conduction tracts—the input and output paths which connect the animal with the outside world.

Invention of Histological Technique

In 1835 Purkinje, an Austrian priest of gipsy family, became possessed of a microscope. In a short space of time he had discovered the nerve cell, and this discovery, added to that of Gall of the nerve tract, was the instigation of all later work. He had invented a hardening reagent, biehromate of potash, which would allow sections of soft tissue to be cut; a machine, the microtome, to cut the sections; a stain, carmine, which would bring out the details; a clarifying reagent, oil of cloves, which would make microscopical examination possible; and a method of making permanent preparations with Canada balsam. Purkinje's work was epoch-making in the progress it caused. As the fruits came at once the establishment of the cellular theory of tissues from Schleiden and Schwann, and the cellular pathology of Virchow. Rosenthal demonstrated that the nerve tract was made up of fibres springing from the nerve cell, and Schwann found the insulating sheath which protects the nerve fibres. Waller, by his methods of degeneration, commenced the tracing of the nerve tracts within the nervous system.

Thereafter, with the wonderful discoveries and patient work largely of the German School, in which the names of Weigert, Edinger, Cajal, and Golgi are prominent, the structure of the nervous system has been made known with such delicacy of detail, such intricacy of connexions, such enormity in amount, as to be altogether outside the possibilities of present-day comprehension of the relation of structure to function except in its lowest and least complicated regions. It is referred to nowadays as one entity, "the nervous network," just as it was first named the "sensorium commune" a century and a half ago.

Discovery of Reflex Action

In 1784 a professor of anatomy in Moravia wrote a very short account of the nervous system, and in attempting to explain how it worked said that "physical and mental stimuli acting upon ascending nerves are conveyed directly through the ganglia and network of nerve threads, to be reflected thence by means of descending nerves with a result in action." This wonderful discovery in thought of reflex action, arrived at so far as we know without definite experiment, is the foundation of most of what we now know concerning the way in which the nervous system works. I will ask you to compare these words of Prochaska with those of Sir Charles Sherrington in the Rede Lecture for last year: "Brain and nerve are but a skilfully laid train of powder between the muscles it fires and the restless world outside which fires it. The question, who pulls the trigger, is easily answered. It is the outside world." And again: "An animal's motor behaviour where the brain nets are large excels in variety and nicety, but it fails to offer anything radically different from reflex action elsewhere." By actual experiment Sir Charles Bell at the Middlesex Hospital, Magendie in Paris, and others discovered the function of the spinal roots as input and output paths by which reflex action is carried on, and Bell most importantly first conceived of the long reflex processes which went as high as the brain. Now all unconscious action is reflex action. The great Pavlov and others have shown us how large a part reflex action plays in conscious action and behaviour.

It is when we arrive at those processes in the brain which are not traceable to outside stimuli and cannot be reduced to the principle of reflex action that our knowledge of the working of the mechanism fails rapidly and finally. I may perhaps give you a simple example of the utter dependence of high cerebral function upon a reflex process. When I speak to you my speech does not flow out from well-trained speech centres in the brain as does water from a full cistern. I must have an immediate and delicate reflex return reaching me by my ears and by the sensation of movement of my lips, which keep me instantly informed as I go along that what I am saying is in correct pattern. If anything blocks the path of both those reflex actions I shall not be able to finish even a sentence, my speech, though long practised, will break down at once into an inarticulate jargon in which both words and pattern disappear. If through a faulty attention to my reflex signals I miss out an important word, my meaning tends to become unintelligible to my listeners and my speech an imperfect function.

The Hypothesis of Nervous Function

Hughlings Jackson, who is the pride of English neurology as Harvey is of English medicine, greatly influenced and moulded the present position of neurology. In method he was the ablest deducer from what seemed to be the minimum of observation, but his chief genius was that he was a relentless dreamer, who criticized with a positive inquisition all his flights of thought, and apparently only gave to the world those which survived this ordeal, for there is hardly a thing of his which has not borne the test of time. He conceived that Nature had builded the nervous system upon the same pattern of function in its several parts: that, at the lower stations, the local requirements of the individual segments of the body were looked after, but that, at higher levels, the requirements of everything below were subserved in increasingly compound proportion ; and that, at the highest levels, the nervous system was concerned with the requirements of the animal as a whole—perhaps some of these concern some parts of the brain more than others.

This remarkable conception, which arose when popular belief was convinced that centres for separate functions in the several parts of the brain were ascertained facts, is substantially the proved knowledge of the present day. The supporters of the belief in local centres of function in the brain had forgotten their parent Gall, and the simple but emphatic statement by which he was overthrown: "There are no such separate functions for localization." I may perhaps put it like this: the functions of seeing, hearing, and feeling are clearly separate so far as the nerve terminations in the eye, ear, and skin are concerned, but when a stimulus from one of these organs reaches the nervous network it becomes modified by all the other stimuli which are in-coming at the moment, and the higher in the nervous system it spreads this modification increases, so that it becomes more and more difficult to think or to speak of it as a stimulus in one isolated function such as vision, hearing, or feeling. Hughlings Jackson wrote: "I cannot conceive any function of vision apart from the function of movement."

It seems clear that the local loss of function which one sees daily from lesions of the brain is the result of the blocking of the input and output paths, and I have arrived at the conclusion that when mental defect occurs from a not too extensive local lesion of the brain it results from a block upon those important tracts which put the several regions of the brain in touch with one another, and never from lesions of the higher regions of the brain, which were formerly supposed to subserve mental functions exclusively. Therefore we have now the vast expansion of the brain, in the words of Sherrington, "as an input and output signalling system which is newly arisen as a gigantic combining mechanism for the signals from the outside world and as a dominant part of the nervous system which tends to deal with the requirement of the animal as a whole more than does any other part."

Locomotor Ataxy and Peripheral Neuritis

One of the most remarkable discoveries in the flight of thought, and one which became a proved principle a century later, came from the distinguished founder of King's College Hospital, Robert Bentley Todd, in an attempt to explain lead paralysis to his pupils. He said: "I believe that the muscles and nerves are early affected, and that at a later period the nerves centres may become implicated. The nervous system is thus first affected at its periphery in the muscles and nerves, and the poisonous influence, continuing the contamination, gradually advances towards the centre." Recently it has been shown by Aub and others that in lead paralysis accumulation of the lead occurs first in the affected muscles, and that the poison seeps up through the nerve endings into the nerves, and reaches the central nervous system. It is now generally accepted that the nerves are protected by their fatty sheaths against the advent of poisons and infections everywhere save where the nerve endings are exposed in the extreme periphery, and that it is only in these exposed terminals that noxious agents can gain access, and that they travel by a process of seepage along the nerve filament to gain the central nervous system. Viruses that affect the nervous tissues travel in the same way, and seemingly spread universally. As the only nerve terminals exposed to the outside world are the olfactory terminals in the nose, it follows that virus infections of the nervous system must be acquired by droplet infection of the nose or by wounds which expose the nerve filaments to infection.

Dr. Todd, who was by far the greatest clinical neurologist Britain had produced until the time of Hughlings Jackson, was the first to begin the breaking up of the spinal diseases, at that time all classed as "paraplegia," by his discovery of locomotor ataxy as a distinct clinical entity. He did this with his usual vivid imagination and his customary absolute faith in his own powers of clinical and post-mortem observation. He stated that the anterolateral region of the cord was the path for common sensibility, and that the cerebellum was the organ commanding position and posture, and that the posterior columns were subservient to the cerebellum in conducting to it peripheral impressions of position for its guidance, and he made the separation for the first time between spinal paraplegia and spinal ataxy. Todd wrote this four years before Romberg wrote his work, eight years before Russell Reynolds described the disease as "muscular anaesthesia," and eleven years before Duchenne christened it "progressive locomotor ataxy."

Lumbar Puncture

In the year 1891, and in a quiet way, came an experiment which slowly led to the most astounding progress in our knowledge of nervous disease and of its diagnosis, differentiation, and treatment. No event in the history of neurology has brought so many assets as has the introduction of lumbar puncture. Quincke of Magdeburg conceived that he might relieve the symptoms of hydrocephalus by draining the cerebro-spinal fluid. Six years previously Corning in America had drained the fluid for the treatment of tuberculous meningitis, but Quincke was the first to make his work known throughout the world. The discovery of changes indicative or characteristic of certain diseases in this hitherto unimportant

fluid soon followed, and lumbar puncture has become a routine in diagnosis and treatment.

It has given us the means of speedy relief from the agonizing pain and danger of increased intracranial pressure, the cure of epidemic meningitis, of cerebral uraemia, of bromide and barbitone poisoning, and it has given us spinal anaesthesia. It has led to the discovery of the clinical features of meningeal haemorrhage and its common cause in leaking aneurysms, to the easy recognition of the many forms of meningitis, and gives definite indications of prognosis in the sugar, chloride, and cell content. Pressure upon the spinal cord and occlusion of the cerebro-spinal space are now easily ascertained by the increased protein in the stagnant fluid, and the exact site of the pressure can be made visible by the injection of lipiodol, which is opaque to *x* rays. By the constant discovery of changes in the protein content of the cerebro-spinal fluid and by the presence often of large numbers of cells therein, our whole conception of peripheral neuritis has been changed from that of an affection of the peripheral nerves to that of a malady creeping upwards along those nerves into the roots and central nervous system. Lumbar puncture has shown that spirochaetal infection of the nervous system occurs at quite an early stage, and this infection often dies out. Those subjects in whom signs of infection persist in the cerebro-spinal fluid are alone liable to the advent in after years of general paralysis and locomotor ataxy, and in the early treatment of such patients with malarial infection, mercury, and arsenic we have, we think, a certain means of stamping out altogether these terrible diseases from the community.

The "Encaged" Virus

Von Economo in 1921 conceived of a virus which, gaining access to the nervous system by the exposed olfactory terminals of the nose, becomes an "encaged" virus within the nervous system with no means of getting out, and which, if not conquered by the natural processes, might remain indefinitely to cause either recurrences of symptoms from time to time or, alternatively, progressive degeneration and death of the nerve elements. On this hypothesis he would explain the varying results of lethargic encephalitis—now a permanent cure, now a series of recurrences, and often again an advancing and resistless break up of nervous function long after the initial infection and when the primary symptoms had been slight. He would explain the absence of case-to-case infection in lethargic encephalitis and in poliomyelitis as due to the fact that the virus is encaged by the time the symptoms appear and cannot get out to infect others.

Infection can only occur from carriers and in the pre-symptomatic period of these diseases when the virus is a surface saprophyte in the nose. Nicolau and Galloway at the Pasteur Institute have shown how the viruses infecting the nervous system travel along the nerve threads to the remotest parts of the nervous system, and that any peripheral nerve twig, if dissected out and placed in the nervous system of another animal, will cause infection. In the course of the universal spreading of the virus the remarkable brightly staining "inclusion bodies" in the nerve cells and the lymphocyte exudations along the nerve fibrils remain as evidence of its passage. This complete invasion of the nervous system may occur without producing any symptoms at the time.

In the case of one encaged virus—that of herpes zoster—it seems clear that a local lowering of vitality of part of the nervous system by reason of injury, exposure to cold, arsenic administration, and other causes, breaks the encagement, and the virus discharges outwards along the debilitated nerve to flower upon the skin in the characteristic shingles, and that flowering upon the skin is the only means of continuing the species and infecting other members of the community. After that flowering the virus within the nervous system dies as does the annual plant in the garden after its flowering. But it may happen that the debilitated nerve along which the virus is able to discharge is a motor nerve, in which case the virus is unable to flower. It may, however, give rise to much commotion with lymphocytic swelling in the nerve, and this is undoubtedly the cause of many of the motor nerve paralyses for which we have hitherto had no causal pathology, the commonest being Bell's facial paralysis from exposure to cold. Von Economo's principle of an infection encaged within the nervous system, existing and producing changes, without causing symptoms or alteration of function perhaps for years, and finally destroying, is likely to bring important developments in the future. As a clinical fact it has been known for long years in the end-results of spirochaetal infection, unrecognized at its advent and symptomless perhaps for half a lifetime.

That disseminated sclerosis never appears before the age of puberty means, I submit, that it takes fourteen years or more for the pathological process to run before symptoms occur. A single transient characteristic sign of this disease, lasting but a few days, often appears as long as twenty-five years before the progressive relentless disability begins, and I suggest that the process of demyelination is all over and irretrievable as soon as the progressive symptoms are present. We are faced with the inevitable scarring which long progressive and symptomless demyelination must entail. We must find some means of detecting the subjects of this disease during the symptomless stage if we are to treat them successfully. It is a remarkable fact that while disseminated sclerosis affects the central nervous system indifferently and everywhere, its destructive potentiality falls upon the younger elements of the nervous system only, those that have been recently acquired—namely, the pyramidal path, the co-ordinating mechanism for the upright stance and the finer movements of the hands, and for the recently acquired function of speech. The older functions of the special senses with touch, pain, and temperature are never progressively destroyed.

Louping-ill in Sheep and Benign Lymphocytic Meningitis in Man

Recently accident has revealed a principle which may have an important bearing upon neurological discovery in the near future. A virus expert was working at the Lister Institute upon the disease of sheep which is called "louping-ill" or "staggers." This is a virus disease, which, entering by the usual nasal route, passes along the nerve threads to the cerebellum, and there kills every nerve cell while leaving the rest of the nervous system entirely unharmed. One day this pathologist became severely ill with acute meningitis, which was supposed at first to be tuberculous, but from which, however, he made a complete and rapid recovery. He went to America to carry on his researches upon louping-ill. Shortly afterwards two of his co-workers and two of his laboratory assistants were seized with severe acute lymphocytic meningitis, from which they rapidly recovered, and it was proved from the serological reactions and by infection of animals that the recoverable meningitis in man was due to the same virus which caused destruction of the cerebellum in sheep.

The principle is that an infection in an animal which gives rise in that animal to a definite and incurable disease may produce in man an entirely different and curable disease. We already had this principle demonstrated in the opposite sense in the virus of herpes febrilis, which in man produces an insignificant event but

when introduced into the rabbit is apt to produce a fatal inflammation of the nervous system. Nervous diseases are common in animals, and it is to the closer association of veterinary and human neurology, and the wide investigation of the two together, that we look with hope to the discovery of cause and treatment in those common nervous diseases which are at present entirely mysterious.

Toxic Absorption and Neurology

The origin of disease and of tissue degeneration as the result of toxins from bacterial infection has entirely dropped out of neurology, except in the cases of the three exotoxins of tetanus, diphtheria, and botulism, which differ entirely from the elusive factor in what is commonly referred to as toxic absorption, in that they are real, they can be isolated and put in a bottle, and their effect proved by experiment. A few years ago the origin of pernicious anaemia and of subacute combined degeneration of the spinal cord in toxic absorption from intestinal infection seemed to have good foundation on clinical and experimental grounds, but subsequent discoveries in gastric and hepatic function have swept all such ideas away, and have introduced a deprivation origin for these diseases with highly successful means for their prevention and amelioration. Toxic absorption, at present much spoken of, will probably be similarly discarded from other realms of medicine within reasonable time.

It is highly interesting that the exotoxin of tetanus, by entering into combination with the protoplasm of the nervous system, does produce a train of events identical with that of the virus of hydrophobia, by living within the nerve protoplasm ; in one case the highest degree of overfunction in the fatal spasm, in another a complete loss of function in the toneless paralysis just like that of severe peripheral neuritis. It is probable that the many conditions of peripheral neuritis, at present without known cause and which seem to be increasingly common among us, may be due to virus infection, and the relapsing tendency after partial recovery is like the behaviour of an encaged virus. The difficulty in this investigation is the discovery of a susceptible animal, without which we cannot find or prove a virus as the cause of disease.

Deprivation conditions are likely to prove a fruitful field in the development of our knowledge of the causes of nervous disease. We have already established that tetany, subacute combined degeneration, beri-beri, and pellagra are due to known deprivations. The pigeon fed on polished rice, and therefore paralysed almost to death, which can be restored to complete strength and action in an hour by the administration of a few drops of infusion of rice husk, is a miracle of the effect that vitamin shortage and vitamin administration can make within the nervous system. It has recently been suggested that disseminated sclerosis may prove to be a deficiency disease.

The recent discovery of Sir Henry Dale that efferent stimuli in the vegetative nervous system produce their effect by the liberation of a chemical intermediary of the choline group, and that stimulation of the sympathetic in otherwise denervated skeletal muscle results in tonic contraction, seems to me to open up the possibilities of great advance in our very scant knowledge of the pathology of the myotonias, myasthenias, and myopathies.

In the progress of neurology the all-essential labours of the physiologist and of the anatomist have almost reached finality. Much addition to the wealth of their discoveries is not to be expected in the future. The bacteriologist, similarly, seems to have added all that is possible from his researches. Not even the absorption of hypothetical toxins troubles us as a factor in the causation of nervous disease. The clinician and his inseparable pathologist have at the present time a fertile field where regional diagnosis has become well-nigh perfect in which to carry on the separation begun by Thomas Parkinson a century ago, and to show the easy recognition of new and distinct nervous diseases. Thus the thirty years of the present century have given us subacute combined degeneration, dystrophia myotonica, amyotonia congenita, epiloia, Schilder's disease, narcolepsy, the meningeal haemorrhages, the cerebral aneurysms, the many pituitary syndromes, and other distinct and easily recognizable maladies. It is astonishing how much more common a malady becomes when it has once been well described. There is scope for a rich harvest in the future, especially in the realms of peripheral neuritis, the muscular atrophies, and the vascular diseases. The virus worker and the biochemist have probably the greatest immediate future before them, heralded by their collection of the plums of the immediate past in their researches on poliomyelitis, tetany, pernicious anaemia, and insulin. The closer association between botanical, veterinary, and human medicine which has made a beginning will, I think, have an outcome in much advance, for nervous diseases are common in animals, and have not received sufficient attention.

The psychiatrist struggles with his most difficult burden of advance almost alone. The anatomist, physiologist, bacteriologist, virus worker, and biochemist have not, as yet, done anything material to clear the path for his progress as they have for the neurologist. Just as the highest functions of the nervous system allow of no physiological or anatomical analysis, so do its disorders at present admit no pathological and causal conception. The primeval forest of psychiatry, with no pathways cleared to look around, is hard beset with an ever-growing jungle of intricate terminology. The progress of neurology in my lifetime has been amazing, and its present position is highly advanced for a civilization which Sir Grafton Elliot-Smith insists is not yet sixty centuries removed from primitive man. And yet I doubt not that neurology has but made a highly successful beginning.

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In his Harben Lecture on " The Diagnosis of Small-pox and the Investigation of Vaccinia by Laboratory Methods," delivered before the Royal Institute of Public Health on October 8th, Professor W. J. Tulloch, M.D., laid down five points which should be emphasized to members of the medical profession, and by them to the public. (1) Vaccination gives complete protection against both small-pox major and small-pox minor for several years, and partial protection for the greater part of the span of life. (2) The real value of the procedure as far as the individual is concerned is that it protects against small-pox major. So far as the community is concerned its value as a protection against small-pox minor is not unimportant, for the control of the minor malady is sometimes rather costly to local health authorities. (3) There is a potential danger at least that small-pox major may gain a footing at any time in this country. (4) We owe a debt of gratitude to the neighbouring countries which do enforce compulsory vaccination. It is significant that this measure is rigidly enforced in those European lands—Bulgaria, Czechoslovakia, Austria, and Hungary—whose geographical position is such that the disease may be introduced from the East. (5) The danger of grave complications following vaccination, notably encephalitis, is very slight when the procedure is performed early in life, but it is by no means negligible when primary vaccination has perforce to be carried out during the school years. In the absence of universal and compulsory vaccination, accurate methods of diagnosis in doubtful cases constitute a valuable addition to our armament for limiting the propagation of the disease.

IMMUNIZATION IN THE PREVENTION OF SPECIFIC FEVERS*

BY

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From a recent paper I note with some, perhaps forgivable, tendency to a breach of the tenth commandment that when Dr. W. H. Park in New York wishes to compare the relative values of different methods of immunization—for example, by toxoid, given in different doses at different intervals, and with or without the addition of alum—he first investigates the problem, as we do, with laboratory animals, and then repeats the same investigation simultaneously on large groups of comparable children in schools—an opportunity which we in England can regard but with envy. Our English evidence has more of the " before taking " and " after taking " flavour.

Immunization in Diphtheria

Dudley recently recorded that before active immunization there were at the Greenwich School about forty-three cases of " diphtheria " each year, while in a comparable population, after immunization was adopted, the notified cases of diphtheria averaged eight each year for five years ; of these cases only eight were clinically recognizable as diphtheria, and in six of them the boys were not yet inoculated. Our own endeavours enabled us to say that from 1921 to 1932 we had kept almost entirely free from diphtheria a school of about 600 children in which twenty cases had recently occurred. Similarly, it has been possible to keep the nursing staff of a large hospital almost entirely free from diphtheria for some five years, without causing any interruption of duty owing to reactions. Two years ago Dr. Parish showed that with toxoid he could produce within about six weeks a state of complete Schick-negativity in 95 per cent. of children in a home, and an appreciable immunity in another 5 per cent.: thanks to the Moloney-Fraser intradermal toxoid test immunization could be carried out without interference with school work. Those who wish to consider what has been done in England will find the details abundantly recorded in Dr. Forbes's book.

If we look at the recent past we find that reasonably good immunity was obtained by the " mixtures " toxin-antitoxin or toxoid-antitoxin, and the first sound evidence that immunization on the large scale was practicable was provided by these prophylactics. At present the " mixtures " are gradually losing favour, except toxoid-antitoxin floccules (T.A.F.), which apparently contains " pure " toxoid precipitated with serum globulin and is free of other " non-specific " substances. At all events, it very rarely causes " reaction," and is the antigen of choice for people who show a positive Moloney-Fraser reaction.

TOXOID AND ALUM-TOXOID

Toxoid alone is being more freely employed all over the world, and on the large scale in Canada. In Europe and the U.S.A. it has been found to make well over 90 per cent. of Schick-positive reactors negative when given in three, or even two, well-spaced doses. Toxoid is apt to cause troublesome local reaction, except in very young children, but this tendency is being circumvented in several ways. Some workers administer a full dose of 1 c.cm. to all children under 5, and at this age troublesome reaction is rare. For older children the Moloney-Fraser intradermic test may be applied: the full dose of toxoid is injected into the Moloney-negative reactors and T.A.F. into the Moloney-positive. A good plan is to give what we have called the " universal " dose to all children—for example, 0.1 c.cm. or 0.05 c.cm. Dr. Chesney of Poole injects all children with a small " detector " dose to identify those likely to suffer reaction after inoculation. Toxoid combined with an immobilizing agent—for example, alum—is also being much used. Innocuous tapioca has been demonstrated by Ramon to have the same property—that is, of causing a retention of the toxoid locally over a long period. Glenny and Buttle showed that the tissue at the site of inoculation when excised some days later and injected into another animal immunized this second animal, and recent American evidence indicates that toxoid may be present in the local " lump " for a much longer period, during the whole of which it is being slowly absorbed and is producing immunity.

What of the future? Alum-toxoid—a discovery made by Glenny, Pope, Waddington, and Wallace—has recently attracted the deep interest of the medical public: the antigen has proved of remarkable service in animal immunization in the laboratory, but I am not yet wholly convinced that it will, for human immunization, displace formol-toxoid, which in two well-spaced doses immunizes rapidly. Apparently in certain " sensitive " children there is a liability to reaction due to the remaining non-specific materials present in the toxoid, as well as the tissue reaction or induration caused by the foreign body, alum, or a complex, alum-toxoid. In the U.S.A. special regulations have been framed for ensuring the potency and other requirements of alum-toxoid, but it is understood that the possibility of a reaction is giving the responsible authorities some concern. C. G. Pope has tested intradermally and subcutaneously in guinea-pigs a number of precipitated toxoids kindly supplied by American colleagues and in wide clinical use. While the tendency of different preparations to cause local reaction in the animal varies considerably, the evidence does not suggest that the American preparations provide better results in this test than some of our own, which seem to be attended by an undesirably high incidence of reaction in the limited number of human observations hitherto open to us. These persistent " lumps " and rare " sterile abscesses " still disturb the picture. C. G. Pope has recently carried out a long examination of the phenomena which happen when various percentages of alum are added to toxoid under different conditions, and has prepared precipitates with a minimal content of alum but a very high toxoid content. The work is promising, and is being pursued.

If we had clinical opportunities we should much like to test whether we can immobilize toxoid for a sufficient period in the tissue with substances less irritant and more absorbable than alum, which would slowly release the toxoid and maintain antigenic stimulation for a sufficient period.

SPECIFIC AND NON-SPECIFIC SUBSTANCES

What are our further aims? When the diphtheria bacillus grows in broth there are finally present at least three substances, or groups of substances, which must be dealt with before the ideal immunizing prophylactic can be prepared:

1. The first is specific toxin. This, as we know, can be turned into harmless but antigenic toxoid by various agencies, the most convenient of which is formalin, producing the well-known toxoid called " formol-toxoid," or, on the Continent, " anatoxine."

2. Secondly, there are a large number of " non-specific " substances—for example, various proteins, amino-acids, salts,

* Read in opening a discussion in the Section of Public Health at the Annual Meeting of the British Medical Association, Bournemouth, 1934.

etc.—in the original broth, and also others of the kind produced by the metabolism of the growing diphtheria bacillus. Many attempts have been made to get rid of these substances. By precipitation, by dialysis, etc., most of the nitrogen can be removed. My colleagues, Mr. Pope and Miss Llewellyn Smith, made toxoid containing only 2 per cent. of the original nitrogen per Lf unit. By modification of the alum method of precipitation, elimination of nitrogen-containing bodies can be carried still further.

3. Thirdly, it almost appears as if the diphtheria bacillus, when building up molecules of specific toxin, gives rise to, as part of the same molecule, another substance undestroyed by heating, which in certain individuals causes the well-known "pseudo-reaction." If this supposition is correct we shall not entirely abolish the liability of unusually "sensitive" people to local and general reactions after the injection of any diphtheria prophylactic unless we can deprive the diphtheria toxin molecule of this "pseudo" constituent, for apparently the same substance, or complex, causes the "pseudo" reaction, the positive reaction in the Moloney-Fraser test, or the local reaction in the "anatoxi-reaction" described by Ramon, and the troublesome local and general reaction which may follow the injection of prophylactic. This supposition is reasonable, for the percentages of people showing these three phenomena are related.

When the chemist can make pure crystalline toxin as he now makes ferments and vitamins we can expect more rapid progress. The biochemist is making always "purer" toxin and toxoid. Jensen has prepared concentrated toxoid of high Lf value. C. G. Pope kindly allows me to say that by absorption methods he has recently prepared a toxin with a very much smaller nitrogen content per L+ or Lf than he has ever previously succeeded in doing. Further progress along these lines is eagerly awaited. I believe that until we can eliminate the "pseudo" constituent we shall not bid glad farewell to the local swelling and general malaise which may follow inoculation in certain people. Before leaving this aspect of the subject I may be pardoned for again calling attention to the efficiency of the method of dealing with an institutional epidemic which was described in 1923 (*Brit. Journ. Exper. Path.*, 1923, iv, 29) —that is, Schick-test and swab everyone; immunize immediately the Schick-positive children; and isolate and examine daily the Schick-positive and swab-positive children, for it is in this group that you will catch all the cases of diphtheria. (Within the past twelve months we have a record that diphtheria attacked more than one-quarter of the nursing staff of one moderately large hospital.)

TYPES OF DIPHTHERIA BACILLUS

The interesting investigation of the "gravis" and "intermediate" types by McLeod and his school suggests the question, Will our current methods of immunization secure immunity against all types of diphtheria? Robertson and Marshall in their Manchester work recorded eight cases of the throat affection long ago described by Harries as "tonsillitis in Schick-negative carriers"; they also recorded one "severe" and three "moderately severe" infections with gravis bacilli in people recorded as Schick-negative (the full immunological data were not reported). Dudley's exhaustive work at Greenwich suggests that the Schick-negative condition produced by immunization with the ordinary prophylactics gives a slightly lower degree of immunity against gravis infections than against mitis, but his conclusion is that, even in infection of the throat of a Schick-negative child, the clinical result is usually trivial. Further, Parish injected a considerable number of gravis cultures, in fatal doses, into more than fifty guinea-pigs which had been rendered Schick-negative by the ordinary prophylactics of various kinds, and found that the animals were immune. In "field trials" on huge numbers of human beings in America, Canada, and on the Continent, prophylactic made from the classical Park-Williams 8 strain seems to have given adequate protection. We are justified, therefore, in the absence of other evidence, in directing all our efforts at the moment towards an improvement of the type of prophylactic hitherto made from the Park 8 strain.

IMMUNIZATION AND THE CARRIER RATE

Has inoculation any remote effect on the uninoculated? Dudley has recently recorded that, following immunization of part of a group of boys in the Greenwich School, the "virulent carrier rate" rose, and therefore the risk of attacks of clinical diphtheria increased for those not yet inoculated. Dudley, with his characteristic caution, warns against assuming that this phenomenon would happen generally. I was naturally deeply interested in this suggestion. I believe I am right in saying that a similar argument was at one stage urged in opposition to the proposal to introduce antityphoid inoculation in India and elsewhere, and that experience provided no justification for the argument.

We had ourselves, in several instances, watched a small group of people during immunization, and had seen no indication of increased danger to those not yet immunized. I wrote to a number of leading authorities in the U.S.A. asking what their experience had been, and received permission from E. S. Godfrey and W. W. Lee and others to say that they were impressed with the fall which follows immunization, and that, so far as their experience and consideration of American figures formed a guide, they found no evidence that the morbidity or mortality rises even temporarily in a partly immunized community because of the suggested rise in carrier rate among the inoculated. I know that some other leading authorities in the U.S.A. hold the same view. I may here refer briefly to a recent review by Das. It has always been something of a mystery that clinical diphtheria is so rare in tropical countries. The Schick-negative rate is high and the virulent carrier rate seems to be substantial, yet diphtheria rarely occurs among either natives or introduced Europeans. There is no indication that by any laboratory test the bacilli existent in these regions differ in any way from those causing severe and fatal diphtheria in temperate countries. These still remain something to explain.

Scarlet Fever Immunization

In connexion with immunization against scarlet fever, there is, unfortunately, little new to report. Active immunization with a small series of doses of toxin gives high protection against scarlet fever. J. G. FitzGerald (*Canadian Pub. Health Journ.*, 1933, xxiv, 455) found that, since all Dick-positive nurses at the Children's Hospital, Toronto, have been regularly immunized, the incidence of scarlet fever has been from 0.4 to 0.7 per cent., whereas previously it was from 5 to 6 per cent. It will be remembered that Harries and Benson in this country supplied similar satisfying evidence a few years ago.

Several workers have aimed at shortening the tedious course of four or five injections. In 1929 Ramon and Debré (*Compt. Rend. Soc. Biol.*, p. 1035) formalized toxin and injected children. The immunity obtained was moderately good, though the course could not be reduced to less than three injections, and reactions occurred in about half the children. From the absence of recent publications, it may be concluded that the method has not yet established itself. Ando and Ozaki, in the Dairen work, perhaps provide the clue. As the intensity of

formalinization is increased, the toxicity is reduced, but, unfortunately, so also is the immunizing efficiency. Veldee has studied the method extensively during the past few years. He inclines to the view that formalinization must not be carried too far; unless approximately 500 skin test doses of toxin per cubic centimetre are left, high immunity is not secured, even with three doses and with the addition of alum. Here again it must be pointed out that experience indicates that progress would be more rapid in England if opportunities for immunizing large comparable groups of children were available. R. A. Q. O'Meara and H. J. Parish kindly allow me to say that they have been working with toxin-antitoxin mixture and with floccules as immunizing agents, but the few results available do not yet warrant publication. G. A. H. Buttle has been endeavouring to immunize rabbits rapidly by several modifications of the ordinary methods and by the use of the toxin of unusually high value described by O'Meara, but has not yet obtained results that satisfy him.

Whooping-cough

The work of Madsen in Scandinavia and Sauer in U.S.A. offers considerable hope. Madsen states that of 1,800 people vaccinated 25 per cent. escaped infection, whereas only 2 per cent. of 450 non-vaccinated people escaped. Sauer found that of 380 young children who were vaccinated and suffered exposure not one became infected. An odd feature is that, while Madsen finds that children rapidly become immune, Sauer does not expect adequate immunity to develop for about four months. Jundell in Sweden vaccinates adult volunteers who have had an attack in the past, and hopes in this way to raise the titre of the antibody in the blood, thus obtaining an equivalent of the invaluable "convalescent measles serum" for protection of groups of young children in contact with sufferers from the disease.

General Note

Two thoughts may occur to the practitioner who is interested in this field of work. Reflecting on the resistance of the average parent to vaccination in any form, he will perhaps conclude that if the enthusiast gets his way there will be too much immunization. He must then remember that diphtheria alone causes 40,000 to 60,000 cases a year in England and 2,000 to 3,000 deaths, and that if we adopt Dr. Glover's estimate of the loss of time due to infectious disease in large schools the lost educational time must cost the community a huge sum each year.

The second thought will probably be one of some regret that progress is so slow. The lag is almost wholly on the human side. The immunologist, in England at all events, is always far ahead of the clinical investigator; with greater opportunity of using, under proper safeguards, different antigens on large groups of children, we should progress faster.

G. Serdaris (*Thèse de Paris*, 1934, No. 64) describes the antimalarial campaign carried out in a period of six months in a small area (Rhododaphnia), of the Peloponnese under the auspices of the International Health Division of the Rockefeller Foundation and the School of Hygiene of the Athens Ministry of Health. Although a definite opinion cannot be expressed until the end of three years, the results hitherto obtained have been very good. The number of *A. maculipennis* and *A. superpictus* has considerably diminished, and the splenic index has decreased, while the haematological index has increased. Quinine salts only were used for treatment.

IRRADIATION TREATMENT OF MALIGNANT INTRATHORACIC TUMOURS

BY

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In September, 1927, one of us (F. G. C.), with Dr. Carlyle Potter, published a follow-up of cases of malignant intrathoracic tumour treated by *x* rays.[1] The results were most discouraging, for out of fifty-nine cases one alone survived. The result in this case, however, was so remarkable that it was impossible to do otherwise than encourage further trial and further development of the treatment. The patient, a young woman aged 25, was under the care of Lord Horder in St. Bartholomew's Hospital in 1923. She was desperately ill with a large mass in the mediastinum, many large glands in the neck, and bilateral pleural effusion. Microscopical examination of a cervical gland showed lymphosarcoma. She still survives in excellent health, and the skiagram is absolutely normal.

The authors of the article were unable to report any prolongation of life, apart from this one instance, and only temporary or no appreciable alleviation of symptoms. In the last few years, however, the results from treatment have seemed to the present authors to be better. Many impressive cases of relief of symptoms have been noted, and also the complete disappearance of the mass in the chest in several instances. It seemed desirable, therefore, to make another investigation into the results of treatment in a series of more recent cases.

Diagnostic Criteria

The first criterion is the proof positive—namely, microscopical examination of a section of the thoracic growth or of a metastasis. This must be accepted as the most convincing evidence, in spite of occasional difficulties of interpretation. The material for examination has been obtained by thoracotomy in seven cases, by bronchoscopy in seven cases (this excludes cases subsequently confirmed by post-mortem examination, otherwise the number would be larger), by removal of a metastasis in five cases, and from post-mortem material in nineteen cases.

The second criterion is clinical evidence: symptoms, signs, course of the disease, and exclusion of other conditions by special investigations. The third is radiological evidence.

It would occupy much space if we attempted to elaborate the last two criteria, nor is it perhaps quite within the scope of this paper. We can say, however, that no doubtful case has been included, and we are confident that the rigid criteria adopted would be accepted by all workers as adequate proof. The few difficult or doubtful cases are described in some detail later.

Our material consists of seventy cases from St. Bartholomew's Hospital, the Royal Chest Hospital, Victoria Park Chest Hospital, and private practice, from 1927 to 1933.

We are indebted to the following physicians and surgeons:

Dr. Geoffrey Bourne, Professor Langdon Brown, Drs. J. B. Christopherson, E. H. Colbeck, E. R. Cullinan, Geoffrey Evans, H. Morley Fletcher, Professor Fraser, Drs. E. A. Gow, G. Graham, Sir Percival Horton-Smith Hartley, Dr. R. Hilton, Lord Horder, Drs. C. M. Hinds Howell, D. Barty King, A. J. Scott Pinchin, Arnold W. Stott, H. E. Symes Thompson, F. E. S. Willis, W. B. Wood.

Sir Thomas Dunhill, Professor Gask, Sir Charles Gordon-Watson, Mr. L. B. Rawling, Mr. J. E. H. Roberts, Mr. H. G. B. Russell, Mr. R. M. Vick.

The cases presented are as follows:

	Cases
1. Bronchial carcinoma treated by *x* rays ...	44
2. Bronchial carcinoma treated by radium or radium emanation	12
3. Malignant tumours other than bronchial carcinoma treated by *x* rays:	
(*a*) Primary in the chest	2
(*b*) Secondary carcinoma	5
(*c*) Secondary sarcoma...	2
4. Tumours of doubtful nature	5

In each of the cases treated by *x* rays at least ten applications were given. In a great number of other cases treatment was abandoned in the early stages of the course, and these have been excluded from this series.

Treatment by Irradiation

It must always be assumed in dealing with neoplasm of the lung that the glands of the mediastinum are involved or are likely to be involved, and must therefore be thoroughly treated. Lymphosarcoma requires a much smaller dosage than carcinoma and endothelioma. Occasionally the early treatments can only be applied from one or two directions owing to the patient being too ill to be moved. Later in the treatment, as the patient improves, other ports of entry can be used. The treatment is spread over two, three, four, or five weeks, and is given on five or six days each week.

Principles of Treatment

1. To give a sufficient dose to the whole growth and to the lymphatic glands likely to be affected.

2. Without restricting the dose on the growth, to give as small a volume dose to the general tissues of the patient as is consistent with efficient dosage to the tumour and lymphatic glands.

3. To damage the lung as little as possible. Lung which has been the site of old inflammation, tuberculous or otherwise, is very radio-sensitive, and exacerbation may result.

4. To cause no damage to the skin beyond a severe erythema, which ultimately clears up. With lymphosarcoma only a mild erythema will be necessary, but with carcinoma a severe erythema verging on blistering is usually required.

5. Some workers, including one of us (N. S. F.), consider lipiodol undesirable in a lung which is to be subjected to irradiation, on the ground that residual lipiodol gives out secondary radiations of long wave-length, which cause damage and necessitate curtailment of the requisite course of treatment.

Technique of Treatment

Various techniques have been used in our cases. As a rule a number of ports of entry are employed, but occasionally, with a very radio-sensitive tumour, only anterior and posterior fields are necessary. Various different plans have been used according to the situation of the growth: if in the anterior part of the mediastinum, a number of relatively small ports of entry are used converging on the mediastinum; but, if the growth extends far into the lung, larger fields are usually employed—generally four—at an angle of 45 degrees to the direct anterior and direct posterior, taking in both the lung growth and the mediastinum, and decentred towards the side of the growth. In other cases, where the growth is almost entirely on one side and far into the lung, a direct anterior and posterior field is used, slightly to one side of the middle line, and this is supplemented by a lateral field on the affected side.

In most cases the filtration has been about 0.5 mm. of copper and 1 mm. of aluminium, and 180 kV continuous current on the tube, but in our later cases a Thoraeus filter has been used, which is equivalent to about 2.7 mm. of copper, with 200 kV continuous current, and at the present time we are using for our private cases an even higher voltage, up to 300 kV Villard circuit current with a filter of 0.6 mm. tin + 0.25 mm. copper + 1 mm. aluminium, equivalent, with the wall of the tube, to about 4 mm. or more of copper. With the increase in filtration the number of roentgens (*r*) to produce an erythema dose increases considerably, and the number of roentgens necessary on the growth also increases.

For a lymphosarcoma or a very radio-sensitive tumour it is necessary to give about 150 to 180 per cent. of an erythema dose, spread over a fortnight; a larger dosage must be given if it has to be spread over a longer period, owing to the patient not being able to tolerate the ordinary dose at first.

With a carcinoma of the lung or resistant growth, about 250 to 300 per cent. is given, spread over a month or six weeks.

The erythema dose we reckon with 0.5 mm. copper and 180 kV is 650 roentgens: the erythema dose with a filter equivalent to about 0.4 mm. of copper and 300 kV is approximately 1,000 roentgens.

Effects of Treatment

It is always difficult to reach a definite conclusion as to the results of any particular line of treatment, and care must be taken in assessing the results. This difficulty applies particularly in the case of bronchial carcinoma, because the criteria of improvement are difficult to define on account of the well-known spontaneous variation of symptoms. In the first place there may be obvious clinical relief of urgent pressure symptoms; secondly, the effect of treatment on the size of the tumour may be observed in serial skiagrams; and lastly, the result as regards the duration of life may be considered.

The first of these criteria is a matter of clinical observation. In calculating the size of the tumour on the *x*-ray film only very gross changes should be admitted, for the direction and penetration of the rays may cause minor apparent changes which are of no great significance. We therefore propose, in judging the effects of treatment on the size of the tumour, only to include cases in which the shadow has practically disappeared. Finally, the duration of life from the date of the beginning of treatment may be considered; the advantage of this is that it provides a fixed point from which calculation may be started, and it is thus more definite than calculations which are based on the total duration of symptoms, in which case no very definite point of commencement can usually be fixed.

The forty-four cases of bronchial carcinoma treated by *x* rays can be divided into the following groups:

1. *Cases which Showed Great Improvement.*—Twenty-three cases are included in this group, primarily on the ground of symptomatic benefit. In ten of these relief of pressure symptoms was rapid and the result dramatic. In eleven there was gradual improvement over a period

of weeks. In the remaining two cases the shadow in the *x*-ray film disappeared, but it is noteworthy that there was little or no improvement in the condition of the patient. Serial skiagrams showed almost complete disappearance of the shadow cast by the primary growth in nine cases, and complete re-expansion of a collapsed lung in two cases. The ultimate fate of the cases is as follows: five are known to be alive at the time of writing, thirty-two, thirty-one, twenty-four, six, and five months respectively after the commencement of treatment. In the first three of these cases it is probable that life has been greatly prolonged in addition to the symptoms being relieved; in one of these the diagnosis has been confirmed histologically. The remaining eighteen patients are all known to have died, and the average duration of life after beginning treatment was 9.7 months. Only three patients survived more than fifteen months, dying respectively in thirty-six, seventeen, and sixteen months.

2. *Cases which Showed Slight Improvement.*—In seven cases there was incomplete but definite relief of symptoms, and in this group the average duration of life was 8.6 months. The fact that the average duration of life in these two groups is about the same would appear to suggest that great symptomatic improvement or disappearance of the shadow in the skiagram does not necessarily indicate prolongation of life.

3. *Cases which did not Respond to Treatment.*—In fourteen cases there was no change in the condition of the patient after a course of treatment. In two, the date of death could not be ascertained; the average duration of life in the remainder was 5.4 months.

It does not seem that *x*-ray treatment has any great effect in prolonging life in this disease, except possibly in rare cases; it is quite definite, however, that this treatment can relieve the more urgent and distressing symptoms in about two-thirds of the cases, and can cause local disappearance of the tumour. In our opinion there is sufficient evidence of symptomatic improvement to justify the adoption of this line of treatment in all cases in which obstructive or irritative symptoms are present. The changes in the size of the tumour, as demonstrated, are sufficient to justify the hope that improvement in the technique of treatment will in the future yield greatly improved results.

4. *Cases Treated by Radium.*—In ten cases in which radium or radon was introduced directly into the growth through a bronchoscope the average duration of life after the operation was 2.4 months. In no case was any dramatic improvement recorded, and, in two, death resulted from haemorrhage shortly after the operation had been carried out. The results in this series are therefore definitely discouraging. In two further cases radium was inserted into the tumour through the chest wall. In one of these marked temporary diminution of the tumour occurred; in the other there was decided improvement in the general condition of the patient for a few months; death occurred eight months after the operation.

Other Intrathoracic Tumours.—Nine cases of malignant tumour other than bronchial carcinoma are included in this series. This group is composed as follows:

Secondary hypernephroma	2 cases
Primary sarcoma	1 case
Secondary sarcoma ? appendix	1 ,,
Secondary sarcoma ? bladder	1 ,,
Secondary carcinoma breast...	1 ,,
Secondary sarcoma fibula	1 ,,
Secondary carcinoma thyroid	1 ,,
Endothelioma ? from thymus	1 ,,

In four cases the treatment did not appear to have any effect. In two cases, secondary to hypernephroma and to carcinoma of the bladder, haemoptysis appeared to be controlled by irradiation; the intrathoracic deposits in the case of sarcoma of the fibula diminished greatly in size under the treatment, and the cough was much relieved.

The remaining two cases are remarkable in that the patients are alive eleven and twenty-one years respectively after treatment.

The first was a patient under the care of Sir Thomas Dunhill and Dr. Thursfield. A mediastinal tumour was present, causing breathlessness, swelling of the neck, distended veins over the back and chest, shoulders, and arms, and a gland or prolongation of the tumour in the right supraclavicular region. A sternal flap was made and the tumour exposed. This was thought to be an infiltrating sarcoma, and nothing more was done. Microscopical examination of the portion removed revealed an endothelioma of apparent thymic origin. Courses of *x*-ray treatment were commenced in August, 1923. The tumour entirely disappeared, and the patient is alive and well at the present time.

The second was also a patient under the care of Sir Thomas Dunhill. She was first seen in November, 1913, when a nodular goitre on the right side was removed. Section suggested malignancy. In 1918 a small nodule was removed from the extreme right edge of the scar. Section showed an almost solid mass of epithelial cells, resembling thyroid cells. The patient remained well until 1927, when a haemoptysis occurred (half a cupful). The skiagram at this date showed rounded nodules in both lung fields. These increased rapidly, until there were many nodules of a perfectly rounded shape in both lungs. *X*-ray treatment was therefore commenced in March, 1928. The haemoptysis ceased and the patient remained in good health, and has done so until the present day, although the nodules have grown in size and number.

Finally, there are five cases to be considered in which both the clinical picture and the *x*-ray appearance suggested malignant tumour, in which either cure or great relief has occurred. Unfortunately, in none of these cases have we histological proof of the nature of the mass. They are of such interest that they are worth describing in detail.

The first was a case included in the original follow-up in 1926. The patient, E. M., was under the care of Dr. Robert Hutchison at the London Hospital in 1924, with swelling of face and neck, and a shadow in the skiagram suggestive of growth in the right upper lobe. The diagnosis was malignant growth. *X*-ray treatment was given, and the patient made a complete recovery. He was seen by one of us (F. G. C.) in 1926, when it was thought that the original diagnosis was probably mistaken, and that it was a case of dense fibrosis and not malignant disease. It fortunately happened, however, that we were able to keep in touch with the after-history of the case. He died in 1933 of intestinal obstruction, when a columnar-celled carcinoma of the descending colon was found post mortem, and, through the kindness of Dr. W. Smith, we were able to obtain the result of the examination. There was marked dilatation of the azygos vein, there were universal pleural adhesions on the right side, and a firm mass was present at the hilum of the right lung, about two by one and a half inches in size. Some fibrosis was present in the lung itself. Section of the mass showed merely much fibrosis with round-celled reaction. The pressure symptoms originally suggested malignant growth of the lung. We can make no further comment.

The second patient,* a woman aged 34, was under the care of Lord Horder and one of us (N. S. F.) in 1930. The skiagram showed an enormous mediastinal mass, extending into and occupying most of the left lung field. This was treated by *x* rays, and the entire mass disappeared, and the patient is alive and well to this day. There must remain a doubt whether this was a primary mediastinal lymphadenoma or a lymphosarcoma.

Case number three was a man aged 57, seen by one of us in 1930, at the City of London Chest Hospital, Victoria Park. The patient complained of cough, shortness of breath, loss of weight, and haemoptysis. There was clubbing of the

* There has been a recurrence in this case in May, 1934. She has again been treated by *x* rays and the shadow has again disappeared, and there is now no evidence of disease.—N. S. F.

fingers. The skiagram showed a dense mass filling the whole of the right upper lobe. Exploratory thoracotomy was performed by Mr. Romanis, when a large inoperable "growth" was encountered. Unfortunately no piece was taken for section. It was assumed to be a carcinoma, and the operation was abandoned. He was then transferred to St. Bartholomew's Hospital, where he was given twenty applications of *x* rays. The mass almost entirely disappeared, leaving considerable fibrosis. The patient is still alive and well, but the nature of the mass remains in doubt.

The fourth case was that of a lady aged 55, seen privately (F. G. C.) first in July, 1932. There was pain in the back and shortness of breath and loss of weight. She had been fairly well until a year previously, when the symptoms commenced. When first seen the patient was extremely ill, with dyspnoea, stridor, and slight clubbing of the fingers. There was intense dullness over most of the left side, almost down to the base, where she was resonant, and where breath sounds were present. Over the dull area breath sounds were absent and vocal resonance diminished. There was a loud surging murmur to be heard in the second intercostal space. She was explored deeply on two or three occasions, when pure blood was obtained with great ease, the syringe rapidly filling. The heart was displaced away from the mass. She was so ill that an exploratory thoracotomy was considered to be unjustified by Mr. J. E. H. Roberts. The diagnosis was a large innocent tumour or a lymphosarcoma: Wassermann reaction negative. On going further into the history it was found that three years previously she had had severe pain in the left chest, which made her faint.

A full course of deep *x*-ray therapy was given, after which she made a most striking improvement, although the shadow remained unchanged. This improvement continued to December, 1933. The patient was able to take long walks and drive a car, and felt comfortable and almost free from symptoms. In December, however, she began to have choking attacks, and a further course of *x*-ray treatment was given. She was very ill both during and after this course, but is improving again, and able to lead an active life. The improvement in symptoms was most striking and dramatic, but again there was no change in the shadow. The nature of the tumour remains in doubt.

The fifth patient was a man aged 54, seen at Victoria Park Chest Hospital; he complained of pain in the right chest and axilla, much dyspnoea, loss of weight, and some cough. There was a large homogeneous shadow in the skiagram, occupying the middle zone of the right chest, and extending from the periphery inwards, almost touching, but not apparently involving, the hilum of the lung. The shadow looked like a localized pleural effusion. Several exploratory punctures were made, however, and no fluid was found. The Wassermann reaction was negative. It was regarded, therefore, as a malignant tumour, and twenty applications of deep *x* rays were given, from February to April, 1933. The tumour practically disappeared, and the patient is still alive and in reasonably good health. Within the last few weeks he has developed headache with papilloedema, almost certainly due to an intracranial metastasis.

Conclusion

There can be little doubt that since the publication mentioned at the beginning of this paper the results of *x*-ray treatment have improved very greatly. We have been able to quote many cases of great relief or complete disappearance of symptoms, and some where the undoubted malignant mass in the chest has entirely disappeared. While we cannot yet claim to have arrived at a cure, we have been able to quote two, and possibly three, cases in which this has apparently been obtained. In two instances, where the diagnosis has been proved beyond all manner of doubt, there has been a complete and lasting cure, but neither of these tumours was of bronchial origin.

In view of these conclusions we shall often be exercised, in making the decision, whether to advise this treatment to an individual patient or not. Relief from pressure symptoms can be expected in a certain proportion of cases, and if these are severe and distressing we can hardly deny the treatment if it is available. In other cases, in view of the unavoidable expense of the treatment or the inconvenience caused by moving the patient to an institution, and the impossibility of guaranteeing a result and the severe reaction that may be suffered during or shortly after the cessation of the treatment, we may find it very difficult to make up our minds. A decision may have to be left to the patient or to the relatives. This attitude will not hinder the progress and development of the treatment of carcinoma or other malignant tumours of the lung by radiation therapy, because there will always be a large number of patients who will demand active measures, and who, particularly in the early stages, will demand this or some other form of active treatment.

In conclusion, we must not forget the dramatic improvement in the individual case in surveying the final result of the treatment critically and dispassionately.

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SPECIAL CLINICS FOR DIABETICS

(ORGANIZATION AND EXPERIENCES)

BY

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The organization required for prolonged treatment of diabetics has become of special interest, since, through the discovery of insulin, even severe cases of diabetes may be kept in a good condition permanently. Yet in actual practice, although the average duration of life among diabetics has increased (Joslin[1]), periodic examinations have often demonstrated the results to be disappointing. According to Loewenberg and Noah,[2] one year and a half after discharge from the hospital only 10 per cent. of the patients were without glycosuria, and a large number showed increased fasting blood sugar or even acidosis. On extending his investigations over a period of six years, Reinwein[3] stated that about 40 per cent. of the patients had died; of the remainder, 42 per cent. did not carry out the insulin treatment properly, and 28 per cent. admitted that they had not strictly adhered to the diet which had been prescribed for them. As a consequence, the largest Berlin panel organization (Allgemeine Ortskrankenkasse) found that the incapacity present among diabetics in most age groups was on the average twice as great as was the case among patients suffering from other diseases (Pryll[4]).

Some Causes of Unsuccessful Treatment

There are different reasons for the fact that the ultimate results in ambulatory practice are so unsatisfactory as compared with the success obtained through hospital treatment. The patients may find a certain diet which, although suitable while at rest in hospital, is insufficient while they are at work. By taking inadequate food they lower their tolerance, and the condition becomes worse, though very often exercises have a favourable influence on carbohydrate metabolism.

This has been proved by experimental as well as by clinical observations. After partial extirpation of the pancreas in the dog physical work diminishes glycosuria, but has no influence on it when the gland has been removed completely (Seo,[5] Allen[6]). Correspondingly, clinical workers have found that in suitable cases exercises could improve the carbohydrate tolerance of diabetics (Trousseau,[7] v. Noorden,[8] Buerger,[9] Allen, Stillmann, and Fitz,[10] Hetzl,[11] Lawrence,[12] Joslin[13]).

Further, the condition of a patient may deteriorate if he is prevented by his profession or for any other reason from having his meals at regular hours. Disappointing results over a long period may often be due to the financial difficulties of the patient, causing him to neglect the treatment. Statistics have shown that disablement among diabetics depends to a great extent on their financial condition, the average duration of disablement being inversely proportional to the income (Pryll[4]). Patients are as a rule prepared to adjust themselves to a diet and to the demands of insulin administration, but lack of money leads to neglect of the treatment, then to a decrease in the carbohydrate tolerance, and to complications which may even endanger life.

Such relapses compel diabetics to undergo repeatedly a strict regime in hospital, because at home only a small number of intelligent and self-controlled patients will allow the physician to carry out the measures necessary in severe acidosis or in the complicating infections. Diabetics therefore become in-patients, not only for short control examinations, but also for longer treatment in order to regain a bearable degree of carbohydrate tolerance.

According to Pryll's statistics, the average stay in hospital for these patients is a rather long one. Likewise, Loewenberg and Noah state that 37 per cent. of their cases were in-patients for from one to three months and 9.5 per cent. for over three months.

Apart from the high expenditure incurred by the long stays in hospitals, the costs for the insulin became very high. For instance, in 1931, 155,000 prescriptions, covering 57 million units of insulin, were issued by British insurance practitioners.[14] Therefore, *for all organizations having a large number of diabetics under their care, the problem was to find a way to keep these patients in a good condition and, at the same time, to diminish the costs of treatment.*

Several proposals have been made in an attempt to find a solution for the problems raised above. Lyon,[15] Earl,[16] Lawrence,[17] Taterka,[18] Rostocki,[19] Gottschalk,[20] and others have written on the subject of clinics for diabetics. Joslin[21] suggested the foundation of diabetic centres and the education of nurses, each nurse having eventually to take care of a large number of patients. v. Noorden[22] considered periodical in-patient treatment to be useful for purposes of control. In order to combine dietetic treatment with individually adapted muscular work, Katsch[23] established a home for diabetics.

Certain essential conditions must be fulfilled in order to achieve a permanent success that is to establish in the diabetics a balanced metabolic condition. It is necessary to have *regular* medical advice, the diet must be adapted to changing circumstances, and it must be impressed upon the patient that his co-operation and self-control alone can lead to lasting good health.

With these ends in view, and in order to diminish, if possible, the expenditure for the treatment of the unemployed diabetics, I, together with Dr. Liebenow, stellvertretender Stadtarzt (municipal officer of health), organized a consulting clinic for a Berlin district of about 360,000 inhabitants, about one-third of them receiving unemployment benefit. The organization and the experiences dealt with in this report are concerned with these 120,000 unemployed people.

Organization of a Consulting Clinic

About 500 diabetics regularly attended the clinic held by the writer and his collaborators in a hospital of the district during three mornings in the week. All analyses were made in the clinic itself. Qualitative and quantitative urinary examinations were carried out at once, but when the blood sugar was examined patients either waited for the results or attended the following session of the clinic. Two to three technicians were occupied in performing the chemical examinations, in dispensing insulin, and in secretarial services. A registration card was kept for each patient which gave clinical dates, the results of the analyses, and the prescriptions issued. A rapid survey of the condition of the patients could thus be obtained.

Dangerous cases—for example, gangrene—were taken to the hospital to which the clinic was attached. Patients attended at least once a month, but if minor cases were continually in a good condition they only came about every two months; on neglecting to come for control examinations they were communicated with by post. The practitioners of the district were instructed to send their unemployed diabetics to the clinic, and they received written reports on the findings of the clinic and concerning the prescriptions and instructions given. The work of the clinic was strictly limited to the investigation and the treatment of the metabolic conditions of diabetics. The practitioners were in continual contact with the clinic, and attended the patients in connexion with all other aspects of their disease, and with any other complaints from which they might be suffering.

Consultations

Every patient had to bring a sample of urine which had been collected during the previous twenty-four hours; some of them were asked to come while fasting for blood sugar examination, or, if necessary, for a sugar tolerance test. The basis upon which diets for diabetics are prescribed will vary according to the outlook of the physician conducting the clinic. He may prefer a diet rich in carbohydrates, eventually to be combined with large doses of insulin (Adlersberg and Porges, cf. Joslin), or a diet containing much fat and a minimum of protein and carbohydrates (Naunyn, Petrèn). He may believe that a restricted diet is a chief principle in diabetes treatment (Allen). All these forms of treatment can be carried out among out-patients.

As the patients of the clinic were of the poorer classes, the economic side of dietary prescriptions had to be considered. It must be borne in mind that the victual prices in different seasons vary to a great degree, some types of food being cheap in summer and expensive in winter, and conversely. We had therefore to change the proposed dishes according to the fluctuation in the actual prices. The patients received *detailed dietetic instructions* through leaflets drafted for this purpose, and each patient obtained also a diet sheet suitably prepared according to the needs of that particular case. Forms were given them which contained equivalents of the different carbohydrate foods, as well as combinations suitable for single meals and for a whole day's menu. Moreover, the costs for these dishes were calculated according to the market rates.

It soon became evident that the expensive diabetic diet could only be made available for necessitous people through some financial aid. The municipality not only assisted them by giving free treatment and medicaments, but also by contributing towards the cost of suitable foodstuffs. The scale of assistance given was based on thorough statistical calculation of prices of the foods necessary, and on the degree of severity of the disease and the requirements of the case. Patients requiring insulin were taught how to disinfect and to use their syringes. They received simple printed instructions as to the time relation between insulin administration and carbohydrate intake, as well as information concerning the signs of hypoglycaemia and how this can be avoided. When patients were unable to inject insulin themselves

they were treated at home by nurses. Visiting nurses also attended them when confined to bed, reported to the clinic, and delivered those samples necessary for examination.

The consultations were supplemented by a series of popular lectures explaining in full the subjects which could only be briefly mentioned during the consultation hours—for instance, the character of the disease, the general treatment and hygienic measures, the different types of diet, hypoglycaemia, and the various complications. In the hospital kitchen patients had the opportunity of learning how to prepare their diet.

Experiences at the Clinic

Some forty to seventy patients attended the clinic during a single session. Most of them came for control examination without having been reminded, and this was particularly so among the severe cases. A considerable number of those attending for the first time were in an unsatisfactory condition. Though receiving large doses of insulin, they often showed high glycosuria or acetonuria. This was caused by neglect of diet for the reasons explained above, or through faulty or erratic insulin administration, as well as through failure to observe the time relation between insulin administration and carbohydrate intake—in fact, this last point often caused the greatest difficulties. Generally the insulin consumption was high, as the patients often continued to use the amount originally prescribed although the tolerance had changed. Some patients had utilized their insulin rather carelessly through lack of supervision. Most of them, when doing muscular work, found it intolerable, both physically and mentally, to take less than four ounces of bread daily. However, when patients became aware that insulin does not cure the disease, but controls it, they usually made the required effort to adhere strictly to their dietetic prescriptions.

Experience has shown that in a great number of patients the form of diet had to be varied. For instance, we often found it necessary to include vegetable days, or, especially in cases with a tendency towards acidosis, an oatmeal day followed by a vegetable day, in order to keep patients in good metabolic condition. A great demand for explanations was apparent at the lectures, usually attended by several hundred persons. These lectures likewise gave a good opportunity for the lecturer to expose the remedies of quacks, so numerous in connexion with diabetes mellitus.

After considering the results of the regular and uniform treatment given within the relatively short time that the clinic existed, I feel justified in concluding that the initial aim of the clinic had been accomplished. Relapses in metabolic conditions occurred but seldom, and the tolerance improved continuously in many cases. This was also proved by the fact that no patient developed coma, although about one-third of all the cases were severe. Consumption of insulin decreased considerably owing to the improvement in the patients' condition as a result of the described method of medical supervision. The first 200 patients treated had previously received about 100,000 units of insulin monthly, but only about the same amount was required by the clinic for about 500 patients. A considerable monthly saving, amounting to several hundred marks, was also made by the purchase of insulin in large quantities. For instance, the price which the clinic had to pay in February, 1933, varied from 45 to 60 pfennigs for 100 units, while previous to its existence insulin was purchased at retail prices (about double the cost). Even in severe cases the adjustment of the diet and of the doses of insulin was made while the patients attended as out-patients, and only exceptional cases were taken to the hospital for this purpose. As all unemployed diabetics of this district, when requiring in-patient treatment, had to be sent to the hospital connected with the clinic, we were able to conclude accurately that the frequency of hospital treatment decreased among these patients. Again, as most patients were able to prepare the diet at home, the food supply of the hospital kitchen was necessary only in a few cases.

Collaboration with the practitioners proved to be both practical and effective, as the clinic worked exclusively on a consulting basis. Thus they considered the clinic as a welcome help, and practitioners from other districts also sent us cases. As regards the financial side, the additional allowance for extra diet distributed monthly was 10 marks in about 25 per cent. of the patients, 15 marks in about 35 per cent., and 20 marks in about 40 per cent. A few cases which did not require an expensive diet had no extra allowance granted to them. It may be added that we had intended to issue to all our patients a booklet containing, apart from personal data (name, age, address, occupation, membership of any panel or insurance organization), the patient's medical history and any important clinical particulars.

Summary

The organization of, and experiences with, a special clinic for diabetics are described. By suitable and *regular* supervision metabolic relapses were avoided, and, in general, the patients remained in a good condition permanently. For organizations having a large number of diabetics under their care such consulting clinics are practicable. Also, a considerable saving may be made by lessening in-patient treatment through the constant adjustment of both the diet and the dosage of insulin, and by buying insulin in large quantities at wholesale prices. In this last way alone the consulting clinic on which this report is based saved several hundred marks monthly.

It was proposed to issue a form for diabetics which would describe briefly the condition of the patient for the use of any physician in case of emergency.

I am greatly indebted to Dr. W. Susman for his assistance in translating this paper.

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A NOTE ON THE ANAEMIAS OF PREGNANCY

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Much has been learnt during the last few years about both pernicious anaemia and the simple achlorhydric microcytic anaemias described by Witts, but, although Whitby, in 1932, wrote a paper on "Anaemias in Pregnancy," the practical importance of these anaemias has been insufficiently realized. The reason for this is not far to seek, because the onset is so insidious and the symptoms are usually ascribed to the pregnancy. The result is that a really dangerous degree of anaemia, most frequently of the microcytic type, arises without its presence being even suspected, and if such a case comes untreated into labour the danger of obstetric shock, even in the absence of any blood loss, is very great.

Some slight diminution in the haemoglobin content and red cell count of the blood is physiological during pregnancy on account of hydraemia, but in addition to this there is very often a superadded true anaemia. The common anaemias of pregnancy are the simple types which may occur apart from pregnancy, but their onset is masked and their gravity accentuated by the drain of the foetus on the maternal organism, particularly in the latter third of gestation. They may thus be subdivided into five kinds: the common microcytic type, the more rare megalocytic or pernicious type, anaemia due to haemorrhage, anaemia due to haemolysis following sepsis, and lastly the rare acute idiopathic haemolytic anaemia of pregnancy.

Microcytic Anaemias

The microcytic anaemias arise from a break in the erythron, or chain of red cell development, at the level of the normoblast owing to lack of iron. This may be due to one or more of three factors—deficiency of iron in the food, deficient absorption, and excessive utilization. Deficient absorption is mainly due to the observed fact that throughout pregnancy there is a reduction of the secretions of the stomach, including the hydrochloric acid content. Strauss and Castle found that in 75 per cent. of cases there was hypochlorhydria during pregnancy with immediate recovery in the puerperium. The remaining 25 per cent., with normal stomach contents in pregnancy, showed a puerperal hyperchlorhydria. The effect of excessive utilization is seen in the last three months of pregnancy, when the red cell count falls rapidly owing to the fact that two-thirds of the iron make-up of the foetus is then supplied. The blood count is typical of the microcytic form of anaemia described by Witts, in that the haemoglobin is diminished out of proportion to the red cell count, giving a low colour index, and in the absence of signs of haemolysis or rapid blood regeneration. Dyspepsia, dysphagia, soreness of the tongue, and enlargement of the spleen are all sometimes present.

The Rarer Types

The megalocytic type of anaemia of pregnancy is less common and appears to be due, as in true pernicious anaemia, to a break in the erythron at the level of the megaloblast. It differs from the latter only in the fact that achlorhydria is not a necessary accompaniment, and that the condition arises during pregnancy and is spontaneously relieved by parturition. The blood picture shows the usual high colour index and leucopenia, and cases generally react well to liver so long as neglect of treatment has not allowed them to fall into an aplastic phase.

There is no need to discuss here anaemia due to haemorrhage or haemolysis following haemolytic streptococcal or anaerobic infections, but a word may usefully be said about the acute idiopathic haemolytic anaemias, which are less rare during pregnancy but are probably related to the infrequently seen haemolytic anaemias occurring during other phases of life.

The symptoms of dyspnoea, oedema, syncope, transient amaurosis or paralysis, fever, haemorrhages, etc., are of sudden onset, usually becoming manifest in the latter two months of pregnancy, and are unaccompanied by any signs of infection or toxaemia. They may occur in primiparae or multiparae, they tend to recur in subsequent pregnancies, and the mortality is in the region of 30 per cent. The blood picture usually shows a megalocytic anaemia with active blood regeneration as evidenced by leucocytosis, and the presence of nucleated red cells and polychromasia. There is excessive haemolysis, causing a positive van den Bergh reaction, and the fragility of the red cells is temporarily increased. Examination of the gastric contents may show no abnormality, but the liver and spleen are sometimes enlarged. The cause of the anaemia is unknown, and treatment consists of blood transfusion, and, if the patient's condition warrants it, immediate induction of labour or Caesarean section. Liver treatment also seems to be of value in some cases.

Recognition and Treatment of Microcytic Anaemia

Although for the sake of completeness it has been necessary to mention the rarer types of anaemia of pregnancy it is the common microcytic type whose importance and frequency it is most necessary to realize. The onset is so insidious and the danger is so real if the patient be allowed to come into labour without previous treatment, that it would seem to make at least a haemoglobin estimation at the seventh month a reasonable routine precaution in ante-natal care. Moreover, the anaemia should be recognized early, as it is in this stage, before there is any tendency to aplasia, that a quick reaction to treatment is to be expected.

The best method of treatment is the administration of iron in large doses or liver, according to the microcytic or macrocytic nature of the anaemia, but the fact must not be lost sight of that both may be needed, and this is particularly obvious in the type of case in which there is originally a high colour index and under treatment with liver the cell count improves and the colour index falls, but the patient does not regain her full quota of red cells. In such a case a little iron will usually complete the recovery. If the patient reacts well to treatment the pregnancy should be allowed to go to term, but if the anaemia shows a tendency to aplasia then termination of the pregnancy must be considered whenever the patient appears to be in a fit condition to stand the shock of labour. In those cases in which severe anaemia is discovered only at term labour should be postponed as long as possible to allow of treatment, and, when it commences, Caesarean section with simultaneous transfusion probably affords the least risk of obstetrical shock.

Four Illustrative Cases

There are two points that it is particularly desired to stress: the frequency of a moderate degree of microcytic anaemia in pregnancy, and the consequent risk of obstetrical shock following delivery if the anaemia is not treated. These points, and also the insidious, occult nature of the anaemia, are well illustrated in the following case reports.

Case 1.—This demonstrated the real risk of obstetric shock in a megalocytic anaemia of pregnancy. Mrs. C., aged 42, a multipara of five, gave a history that for three weeks before her last pregnancy, nine years ago, she had severe vomiting, and that she was very ill for some months afterwards. For five years she apparently had had a recurrent urinary infection. Within a month of again becoming pregnant she began to feel ill and vomited. She was admitted to hospital seven months pregnant in a very serious condition, very pale, and with oedema of the feet and abdomen. The urine contained no albumin, the blood pressure was 130, and the blood urea was 22 mg. per cent. The blood count showed a haemoglobin of 30 per cent., red cells 1,300,000, colour index 1.1, and white count of 6,000. A film showed slight anisocytosis and polychromasia and a few nucleated red cells. The patient was treated with liver extract, iron, and transfusion, but after a week she had but little improved. The urine now contained albumin, and the blood count was unaltered. Two days later the patient came into labour, which was rapid and normal in every way, and gave birth to a live child weighing 4 lb. 10 oz. The total blood loss was estimated at under 10 oz. The patient, however, became very shocked and died four hours later.

Case 2.—Some of the difficulties of diagnosis, even in a very severe grade of anaemia, were shown in this case. Mrs. G., aged 25, a multipara of three, was admitted to hospital, seven months pregnant, for toxaemia of pregnancy. She gave a history that for the past month she had felt tired, had had frequent headaches, and had lately begun to "swell up." On admission there was gross oedema of the legs, abdominal wall, and vulva. She was pale, but the pallor was masked by telangiectases on the cheeks. The blood pressure was 120 80, temperature 99°, pulse 100–110. The urine was of 1020 specific gravity, and contained a trace of albumin. Blood urea was 18 mg. per cent. Blood count: haemoglobin 22 per cent., red cells 2,120,000, colour index 0.5, white cells 8,800. A film showed slight anisocytosis and few nucleated red cells. On treatment with massive doses of iron, within two weeks the patient felt quite well, all oedema had gone, and the haemoglobin was 50 per cent., with a colour index of 0.8. A test meal was performed and showed complete achlorhydria. The patient came into labour and had a normal delivery at term, the blood count then being—haemoglobin 80 per cent., red cells 4,000,000, colour index 1.

Case 3.—A typical case of microcytic anaemia of moderate degree. Mrs. H., aged 29, a one-para, gave a history of vomiting and giddy attacks since seven months pregnant. When seen at the eighth month a blood count showed a haemoglobin of 43 per cent., red cells 4,150,000, colour index 0.5, and white cells 4,600. On iron medication the haemoglobin rose to 55 per cent. during the next month, and three weeks later, after a normal delivery, it had risen to 78 per cent.

Case 4.—Another case of moderate degree of microcytic anaemia. Mrs. T., a multipara of two, was seen when seven and a half months pregnant, complaining of paroxysmal tachycardia. On examination the heart appeared normal and the mucous membranes were slightly pale. A blood count showed a haemoglobin of 68 per cent., red cells 3,860,000, colour index 0.88. On treatment with iron the haemoglobin rapidly rose to 79 per cent., the attacks ceased, and she had a normal delivery at term.

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A conference on "Youth and Health: What can we do to Help?" organized by the British Red Cross Society, was held in London last June, and among the speakers were Dr. Ralph Crowley and Dr. Margaret Lowenfeld. A full report of the discussions has now been published by the society at 14, Grosvenor Crescent, S.W.1, in pamphlet form, price 6d.

Clinical Memoranda

SUPERIOR MESENTERIC THROMBOSIS

In connexion with an article on the above subject by Mr. R. M. Sargent, published in the *Journal* of July 14th (p. 64), it may be of interest to report a case of spontaneous recovery from a superior mesenteric thrombosis which occurred at the Herefordshire General Hospital under the care of Mr. E. W. Du Buisson, who kindly allows me to report it.

A woman, aged 54, was admitted in November, 1916, with abdominal pain and vomiting—pulse 120. An old right femoral hernia was reduced by taxis, and the patient, relieved, insisted on going home. The next morning she was sent in by her doctor as a possible "reduction en masse" with acute abdominal pain and vomiting. The pulse was now 130. At operation the hernia was found properly reduced. The incision prolonged upwards, however, showed one and a half feet of small intestine near the caecum much dilated and rosy red in colour. There was lymph in the coils and a thrombosis of the mesenteric trunk. The contents were milked down, the hernial sac was removed, and peristalsis noted before the abdomen was closed. She recovered well, though enemata were necessary for some weeks.

Hereford. B. E. W. Stallard.

VARICELLA AND HERPES ZOSTER

The cases described below, which would appear to show a clear clinical relation between herpes zoster and varicella, seem worthy of record. The Barbara-Edith Convalescent Home for Children at Blechingley is staffed by a matron and a nurse. There are, in addition, three domestics. Apart from these people and myself, as honorary medical officer, the twelve children, admitted there as convalescents from London hospitals and associations, come into contact with no other persons (except their parents, who are allowed to visit them on one day only in a month), since the home is right in the country and some way from any neighbouring dwelling.

Margaret W., aged 3½ years, was one of a batch of children admitted to the home on May 14th, 1934. She had, on the day of admission, her first crop of herpes zoster, localized to the tenth dorsal segment on the left side. Except for her age, her attack of shingles was in all respects completely typical, and was well developed when she was first seen by me on May 24th, ten days after its beginning.

Betty H., aged 3½ years, was one of the same batch of children admitted on May 14th. On June 6th she developed a few vesicles, suspiciously like early varicella, but had no fever. In the light of the other cases, and because of the subsequent course of her rash, there is no doubt that she had an attack of varicella.

Poppy B., aged 4½ years, was also one of the same batch of children admitted to the home on May 14th. On June 7th—that is, on the twenty-fourth day following that of her admission—she developed a crop of vesicles in all respects like early varicella, and ran a temperature (up to 100° F.) for forty-eight hours. By the third day there was no doubt that she had this disease. Since their admission the above three children had come into contact with no outside persons, except on a visiting day, which happened on June 2nd, and which therefore allowed too short a period of incubation for them to have been infected on that day.

On June 22nd Sadie G., aged 4½ years, was seen with typical first-day varicella. She had no doubt been infected by one of the two preceding cases.

Unless the varicella took at least twenty-four days in incubating, which is exceedingly improbable, there seems little doubt that it must have been communicated from the child suffering from herpes zoster, who was a free contact with all the other inmates of the home.

Blechingley. Douglas Robertson, B.M., M.R.C.P.

Reviews

DERMATOLOGY

For many years the handbook on *Diseases of the Skin* by the late Sir Malcolm Morris was one of the leading authorities on the subject in the English-speaking world, and its popularity may be estimated from the fact that no fewer than seven editions were needed within a little over twenty years. It was always kept thoroughly abreast of the modern developments of the specialty, and in preparation of the three last editions Sir Malcolm Morris was assisted by Dr. S. Ernest Dore. But the seventh and last edition has now been out of print for some years, and has necessarily fallen out of date. Dr. Dore felt that it should once more be brought abreast of the times, and began to revise it for that purpose. But as the revision progressed it was found that although the original structure and classification might be preserved, so much fresh matter had to be introduced that the book became practically a new one. Hence the volume now before us is the production of the joint authorship of Dr. Dore and of his colleague Dr. John L. Franklin.[1] Curiously enough it is somewhat smaller than the parent work, but it is extraordinarily concise, and contains all the essentials of the subject.

Although, necessarily and properly, greater space has been devoted to the dermatoses which are most frequently met with in clinical work, mention is made of very nearly every pathological change in the skin, however rare it may be. In our opinion it is doubtful whether this completeness is advisable in a book intended for students and practitioners. To some extent it tends to give the uninitiated a distorted view of the subject. The vast bulk of patients, both in hospital clinics and in general practice, suffer from a very limited number of diseases. There are, we believe, about three hundred and fifty skin diseases catalogued in nosological nomenclature. Of these at least two-thirds are so rare that they may well be omitted in a textbook intended for students and general practitioners. They interest the specialist alone, and him only as museum specimens; but when a student finds a considerable portion of a textbook occupied with these conditions which are all blessed with names of extraordinary length, he fancies that in order to deal with the skin troubles of daily life he must be familiar with acanthosis nigricans and purpura telangiectodes, although in all probability he will never see such a case in his lifetime. Hence he sometimes fights shy of the dermatological department altogether, and loses the opportunity of learning to manage the impetigo and dermatitis cases which will comprise 98 per cent. of the skin patients he will meet with in an ordinary practice. We do not for a moment suggest that the perusal of the present work will have this deplorable effect on the student mind, but possibly it would not have mattered if a few of the rarities had been omitted. It is a thoroughly good book, and the old bottles which have been taken over from its famous predecessor in the shape of structure and pattern turn out to be quite well adapted to contain the new wine of modern dermatology.

The illustrations are plentiful and good (some of them, too, we recognized at once as having been transferred from the parent volume), but the authors have not been seduced by the meretricious charms of coloured plates; those plates which one always expects to be so graphic, but which so often are unsatisfactory! Finally, we may add that the book is of convenient size and moderate price, and deserves to enjoy the same popularity as its forerunner.

[1] *Diseases of the Skin. A Handbook of Dermatology for Practitioners and Students.* By S. Ernest Dore, M.A., M.D., F.R.C.P., and John L. Franklin, M.A., M.D., M.R.C.P. London: Cassell and Co. Ltd. 1934. (Pp. 410; 46 plates. 10s. 6d. net.)

BLOOD TRANSFUSION

A monograph on Blood Transfusion in Medical Practice by Dr. R. Liège[2] is in two parts, dealing respectively with indications for this procedure and the results to be expected from it, and with its possible dangers. The conditions in which blood transfusion may be indicated are placed in four main categories: blood diseases, haemorrhage from the alimentary tract, typhoid fever, and a miscellaneous group described as infections and intoxications; it will be understood from this that the adjective "medical" in the title of the book is to be interpreted in its narrower sense, since no reference is made to surgical or obstetrical indications. The possible uses of blood transfusion in a number of conditions in which its value is perhaps not clearly established are stated fairly and with caution; the same attitude animates the section on immuno-transfusion, in which a clear distinction is drawn between three different procedures covered by this term. The dangers of blood transfusion are discussed at almost equal length with its indications, and the number of pages devoted to the accidental transmission of syphilis and malaria is perhaps disproportionately large; the remainder of this section is, of course, concerned chiefly with the effects of transfusing incompatible blood.

Alleged instances of a change in blood group which have been reported are discussed at some length, and the author is inclined to believe that such a change can occur. This most disturbing question is one which evidently calls for the fullest inquiry, although those more sceptically inclined will be content to declare that an inherited character must be a fixed one and to dismiss supposed examples of changed group as due to errors of technique. It is perhaps unfortunate that no emphasis is laid on the paramount importance of a direct test of compatibility; if the serum of all patients likely to require transfusions were obtained and kept available as a routine measure these accidents would not occur. Technique, however, is not dealt with in this book, except that a short section is devoted to the special difficulties of choosing a suitable vein in young children.

To physicians and others interested in the medical uses of transfusion this book affords an opportunity of comparing practice in France with that of this country. That the widespread use of transfusion is of somewhat recent development in Paris appears from the fact that the number of transfusions from donors belonging to an organized service has risen from only 220 as recently as in 1929 to 3,738 in 1932. There is a useful bibliography.

AN INTRODUCTION TO BIOCHEMISTRY

It is a matter of no small difficulty for an author of an introduction to a subject to determine precisely how he shall interpret the word introduction. Shall the book present the facts and interpretations in a manner calculated to attract the interest of the neophyte and stimulate him to proceed to a deeper study, or shall it place before the reader a mass of facts, formulae, and figures which may be readily memorized for examination purposes? There is, of course, a place for each of such works, and under present-day educational conditions the latter kind of book will probably have the wider public, provided it is well written and the facts are put in a pleasantly palatable form. If, in addition, the work is up to date and documented with nice selectivity, it is assured of an enthusiastic reception. Such a book is that of Dr. W. R. Fearon, now before us.[3]

[2] *Transfusion du Sang et Immuno-Transfusion en Pratique Médicale. Indications, Resultats, Accidents.* Par R. Liège. Paris: Masson et Cie. 1934. (Pp. 174; 16 figures. 22 fr.)

[3] *An Introduction to Biochemistry.* By W. R. Fearon, M.A., Sc.D., M.B., F.I.C. London: William Heinemann (Medical Books) Ltd. 1934. (Pp. 313. 10s. 6d. net.)

Biochemistry is a young science, and the rapid increase in knowledge makes it very difficult to present a compendium of facts which will not, almost before publication, be superseded. The methods which are at our disposal in biochemical work are still crude in most branches, and the lack of some unitary biological theory makes our interpretation of experimental results often appear elementary and unconvincing in the face of the vast complexity of life phenomena.

Dr. Fearon deflects somewhat from the usual practice in works of this kind, in that he pays considerable attention to the inorganic elements, but the mode of presentation of this branch is dull, and not even the besprinkling of the text with quotations from the poets saves it. The sections dealing with the organic compounds of biochemical importance contain a peculiar mixture of what might be called theoretical biochemistry and practical tests. The theoretical discussions, classifications, and formulae are excellently done, but the value of the practical directions seems to us doubtful. This is emphatically not a book for the laboratory, and the biochemical tests, if they had to be included, might well have been done in a series of separate sections or in an appendix. As it is, the student will simply have to copy out these tests should he decide to use the book for laboratory work, and use them separately from the general text. Some peculiar remarks in the book must be noticed. For example, the author sees in the fact that muscle glycogen does not fall in starvation to so great an extent as does liver glycogen, evidence of a difference between "reserve" and "structural" glycogen. What "structural glycogen" is we do not know. Another peculiar statement is that the sympathetic constricts the muscular wall of the intestinal tract.

The chapters dealing with intermediate metabolism, reduction-oxidation systems, and the pyrrol pigments are excellent, and contain a mine of valuable condensed information. Taken altogether this is definitely a book to have, and will prove invaluable to the student preparing for the higher examinations, as well as for the teacher who wishes to refresh his memory in fields other than his own.

FRACTURE OF THE NECK OF THE FEMUR

Dr. Sven Johansson, surgeon-in-chief to the Gothenburg Hospital, has published (in English) a monograph, with 157 illustrations, on *The Operative Treatment of Collum Femoris Fractures*.[4] In short space he gives a good review of treatment from Royal Whitman's original work up to the present day when he is able to give the results of operation after his own method on fifty cases, and to refer in bulk to another 150 operated by the same method in Sweden by other surgeons. The author is a consistent and rational advocate of osteosynthesis with a stainless steel nail, but, unlike Smith-Petersen, he avoids exposure of the fracture.

There seems good ground on which to base acceptance of Dr. Johansson's conclusions—namely, that by his series of cases he has proved that by proper reposition and fixation osseous union and a fully satisfactory functional result may be obtained in the majority of cases, even in medial collum fractures, and even in very old patients; that it is possible to obtain the fixation necessary for good union by means of extra-articular osteosynthesis on the principle and by the method described in the present volume; that the method, in spite of its wider indications, probably reduces the mortality risk; that osseous union is effected in shorter time, and the after-treatment simplified; that the conservative treatment hitherto used, as well as operative treatment with exposure of the fracture, should therefore be abandoned and replaced by extra-articular osteosynthesis as the standard method. We must not be taken to suggest that such a method can be placed in the hands of every surgeon. Special experience of orthopaedic measures, as well as of the apparatus employed, is necessary, and every step must be guided and checked by *x*-ray control. The object must be to provide enough centres to which patients can be brought for early treatment, rather than to attempt to place highly trained and experienced operators in every town.

[4] *The Operative Treatment of Collum Femoris Fractures.* By Sven Johansson, M.D. Copenhagen: Levin and Munksgaards. 1934. (Pp. 148; 157 figures.)

HYGIENE FOR NURSES

To write briefly and well for nurses, who although not medically trained are so closely in touch with the affairs of medicine, is perhaps not very easy on any medical topic. In the case of hygiene it is especially difficult, since there is on the one hand so much to say because it is important, and on the other so much to omit lest it overweight the reader. In the fifth edition of Dr. Whitby's handbook[5] the essentials of the subject are well presented, and little appears that is superfluous, unless it be McKinnel's ventilator, with diagram, which is scarcely worthy of the space it occupies. Particular attention has been paid to infection, food, and personal hygiene. In the chapter on infection, preventive medicine is happily described as a practical large-scale application of the aseptic technique of the operating theatre. Immunity is well summarized, and what is said on the Schick test is sufficiently informative. The part played by milk in spreading typhoid fever nowadays might perhaps have been more emphasized. The advantage of the cresol derivatives in disinfection is properly indicated, but it would, we think, have been of service to lay more stress on the respective values of concurrent and terminal disinfection, since the former, which is mainly the nurse's duty, is now to be regarded as the more important of the two. In the chapter on food the canned tomato is noted as a good source of vitamins. Ptomaine poisoning is described as "of rare occurrence," which is a step in the right direction. In the chapter on personal hygiene an hour's tennis is preferred to stereotyped muscular exercises, which is good advice. The above remarks, where critical, merely reflect shades of difference of opinion. We have found no errors in the book, which is concise and lucid in style, and well adapted for reading by nurses. We commend it to their teachers also, who will find it a reliable guide in deciding not only what to say but how best to say it.

The State examination in hygiene for nurses now covers a field which in scope at least, though the standard of knowledge expected is different, is comparable with that professed by the student of medicine. With a view to helping the nurse to prepare herself for this ordeal the Sister Tutor of Middlesex Hospital has published a guide to the examination in the form of question and answer.[6] The questions for the written examination appear to be well chosen. A number of them have doubtless already been set and the rest are such as might be. The answers given are of suitable length, and should satisfy the examiners. A useful feature is the inclusion of specimen oral examination questions, the answers to which are not expressly supplied, being contained in the text elsewhere.

[5] *The Nurses' Handbook of Hygiene: An Elementary Text-Book.* By L. E. H. Whitby, M.A., M.D., F.R.C.P., D.P.H. Fifth edition. London: Faber and Faber Ltd. 1934. (Pp. 174; 23 figures. 4s. 6d. net.)

[6] *Aids to Elementary Hygiene. A Guide to the Preliminary State Examination.* By Evelyn C. Pearce. London: Faber and Faber Ltd. 1934. (Pp. 163. 3s. net.)

Notes on Books

New editions of two large and well-illustrated textbooks of histology have reached us from America. One is a sixth edition[7] of a work by Dr. Harvey Ernest Jordan, professor of histology and embryology in the University of Virginia; the other is a second edition,[8] reshaped typographically throughout, of the work by the late Professor Alexander Maximow and Dr. William Bloom, of the University of Chicago.

The *Craniocerebrale Schemata für die Roentgenographische Lokalisation*,[9] by Professor A. Schüller and Dr. H. Urban, are intended to help the radiologist in localizing intercerebral disease and in determining the exact situation of foreign bodies. The method is simple, quick, and precise enough for practical purposes. It has none of the disadvantages attached to the various means of localization of intercerebral disease by contrast methods. The authors claim that endocranial foreign bodies—including projectiles and air pockets, abnormal calcification and ossification of the skull (so-called "cerebral stones"), calcified and ossified tumours of the brain, its membranes, and vascular system—can all be accurately localized, as can also traumatic defects. A detailed description is given of the radiographic technique, which is very easy to carry out. The radiologist will find the "Craniocerebrale Schemata" a valuable addition to the many methods of localization.

No. 13 of the medical pamphlets issued under the auspices of the Medical Society of Individual Psychology[10] comprises two lectures by Dr. Alfred Adler and an address by the late Dr. F. G. Crookshank, together with some miscellaneous matter. These pamphlets are now edited for the society by Dr. J. C. Young.

First Aid in Defence against Chemical Warfare, by Major-General D. J. Collins and Major H. Stuart Blackmore, is a booklet issued by the British Red Cross Society.[11] It was first published in 1929, and a second edition has now appeared. The subject is one of considerable topical interest, for reports from the Continent show that great attention is being paid there to methods for protecting civilian populations in cities against aerial gas attacks. The book gives a short and clear account of the chief types of gas used in the Great War, and of the methods that were then elaborated for treating gas casualties. An intensive gas attack on a large city is a horror of which at present we have no experience, but medical men who had much to do with gas casualties in the Great War can visualize some of its probable effects. A chapter is devoted to the protection of the civilian population based on the recommendations of the International Red Cross Committee. The general idea appears to be to organize an ambulance service, adequately protected by masks and clothing, for the collection of casualties and to tell the rest of the population not to give way to panic. It may be appropriate to mention here a paper on "The Chemist and National Defence," which was read by Mr. J. Davidson Pratt before the Glasgow Section of the Society of Chemical Industry on October 5th, and has since appeared in *Chemistry and Industry*.

The 1934 edition of the Register of Members of the Chartered Society of Massage and Medical Gymnastics[12] covers the period July, 1920, to April, 1934. A new section has been made for those who are not practising, or whose addresses have proved untraceable. Some inconvenience had been caused in the past by failure to distinguish these. In other respects the new issue resembles its predecessors, there being in addition to the main register of masseuses and masseurs a useful place index, which enables a medical practitioner in any part of the country to discover quickly those who are at work in his neighbourhood. Additional qualifications which are also noted include those for medical gymnastics, medical electricity, and medical hydrology. It may be recalled that these masseuses and masseurs undertake no case except under the direction of a medical practitioner; do not advertise except in recognized medical and nursing papers; and do not sell goods to patients in a professional capacity, nor accept secret commissions on the sale of goods. They merit, therefore, the strong support of the medical profession, which is thus safeguarded against the unregistered and uncontrolled practitioners of massage whose training has been less carefully regulated and whose work is not under supervision.

[7] *A Textbook of Histology*. By Harvey Ernest Jordan, A.M., Ph.D. Sixth edition. London and New York: D. Appleton-Century Company Inc. 1934. (Pp. 738; 610 figures. 30s. net.)

[8] *A Textbook of Histology*. By Alexander A. Maximow and William Bloom. Second edition. Philadelphia and London: W. B. Saunders Company. 1934. (Pp. 662; 530 figures. 30s. net.)

[9] *Craniocerebrale Schemata für die Roentgenographische Lokalisation*. Von Professor A. Schüller und Dr. H. Urban. Leipzig and Vienna: F. Deuticke. 1934. (Pp. 8; 17 figures. M. 4; geb., M. 5.)

[10] *Individual Psychology and Sexual Difficulties. (II)*. By Drs. Alfred Adler and F. G. Crookshank. London: The C. W. Daniel Company. 1934. (Pp. 55. 2s. 6d. net.)

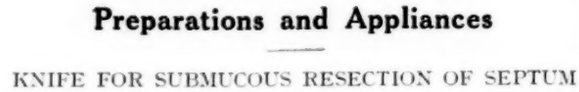
[11] London: Cassell and Co., Ltd. 1934. (Pp. 68. 6d. net.)

[12] London: Tavistock House (North), B.M.A. Building, Tavistock Square, W.C.1. (4s.)

Preparations and Appliances

KNIFE FOR SUBMUCOUS RESECTION OF SEPTUM

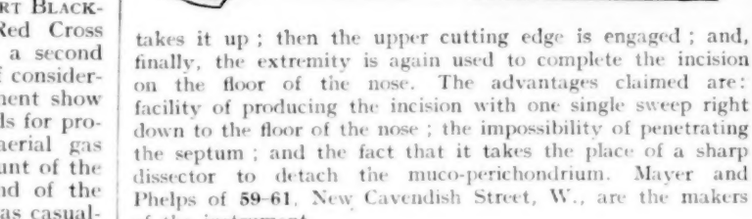
Mr. Arthur Miller, F.R.C.S. (London, W.1), writes: The knife here illustrated has been designed and used by me for the submucous resection of the septum. It is double-edged at the sides and somewhat oval-shaped at its extremity. The incision in the mucosa begins in the uppermost angle of the nostril, and is continued in one sweep right down to the floor of the nose. The lower cutting edge starts the incision; about half-way down the septum the extremity of the knife



takes it up; then the upper cutting edge is engaged; and, finally, the extremity is again used to complete the incision on the floor of the nose. The advantages claimed are: facility of producing the incision with one single sweep right down to the floor of the nose; the impossibility of penetrating the septum; and the fact that it takes the place of a sharp dissector to detach the muco-perichondrium. Mayer and Phelps of 59–61, New Cavendish Street, W., are the makers of the instrument.

CALCULUS FORCEPS

Mr. Conal Charleson, F.R.C.S.Ed., honorary surgeon, Perth Royal Infirmary, writes: The difficulty of removing certain calculi from the bile ducts and ureters has led me to devise the instrument shown in the accompanying illustration.



Basically these forceps consist of an outer sheath in the form of Mayo's gall-stone probe, enclosing a fine wire terminating in three claws activated by the handles. An opening is made in an accessible part of the duct and the instrument is passed in with the claws closed up into the form of a probe point until they impinge upon the stone. The claws are then opened, this action being synchronous with their advancement distally to grip the stone. The grip is tightened and the forceps withdrawn, carrying with them the calculus if all goes well.

The claws open sufficiently to grip strongly anything up to the size of a large pea, and are designed to cause the minimum of trauma to the mucosa of the duct on introduction or withdrawal.

I am indebted to Messrs. Mayer and Phelps for carrying out the manufacture of this instrument with considerable skill.

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THE OUTLOOK IN NEUROLOGY

"A rare and precious gift," says Osler in one of his essays, "is the Art of Detachment by which a man may so separate himself from a lifelong environment as to take a panoramic view of the conditions under which he has lived and moved: it frees him from Plato's den long enough to see the realities as they are, the shadows as they appear. Could a physician attain to such an art he would find in the state of his profession a theme calling as well for the exercise of the highest faculties of description and imagination as for the deepest philosophic insight." Dr. James Collier's Harveian Oration on "Inventions and the Outlook in Neurology," which we publish to-day, is an outstanding example of this Art of Detachment, and exhibits to the full those powers of description, imagination, and philosophic insight of which he is a master. In his survey of neurology he brings a knowledge of the past to the illumination of the present, and seeks in both for those principles which must guide its future development.

The relationship of form and function in the nervous system is a problem which thrusts itself upon the attention of the neurologist and which most impresses with its difficulty those who have spent their lives in its study. The neurologist, as such, is always concerned with a damaged nervous system. He stands outside it and watches its attempts to carry on its functions in spite of its injury. He is like a geographer trying to draw a map of a country by observing the effect of an earthquake upon the arrival and departure of trains at the railway termini and by questioning the passengers. An injury of the nervous system, whether produced by experiment or by disease, will throw most light upon function in those regions where function is a rudimentary telegraphic conduction of impulses. Hence we know much about the functions of the peripheral nerves and of the spinal cord and practically nothing about the functions of those regions of the cerebral hemispheres which are concerned with thought, speech, and feeling. The conducting functions lend themselves to a high degree of localization, as, for example, in the tracts of the spinal cord. The psychical functions of the cerebral hemispheres are not amenable to localization in the same way. Nevertheless, although the early crude notion of localized centres for speech, sight, and hearing has been abandoned, a sublimated form of it can be found, at least as a working hypothesis in the equipment of many, if not most, neurologists. In part this is because the clinical effects of localized lesions of the brain indicate that localization of function exists up to a point, though Dr. Collier believes that this is limited to "the input and output paths." In part the persistence of an outworn theory of cerebral localization is due to the difficulty of forming any clear conception of how the brain can function as a whole, and, indeed, of how a network of neurones can function at all to produce thought and feeling out of conducted impulses. To regard, let us say, the Harveian Oration as a manifestation of reflex action, however elaborate, is an act of faith, not a conclusion of science, and owes its plausibility, if plausible it be, to certain philosophical presuppositions. It is unlikely that any progress towards a solution of this problem will be made until it is recognized that form, which is three-dimensional, is incommensurable with function, which, since it involves time, is four-dimensional.

Some of Dr. Collier's views will encounter criticism. Although to him belongs the credit for suggesting that Bell's facial palsy might be due to the virus of herpes zoster, the researches of Drs. R. S. Aitken and R. T. Brain[1] have shown that this is true of less than 20 per cent. of cases. Few neurologists will accept Dr. Collier's contention that in disseminated sclerosis "the process of demyelination," itself symptomless, "is all over and irretrievable so soon as progressive symptoms are present." Nor will it be generally agreed that the recognition of deficiency diseases has made toxic absorption of no importance. The two may be closely related, as is demonstrated by Mellanby's[2] observation that vitamin A protects the organism against the toxin which causes convulsive ergotism. These, however, are unimportant details. The main implication of Dr. Collier's oration is that a new orientation of neurology is occurring. Applied anatomy and applied physiology, which proved so fruitful a field of research for many years, are becoming exhausted, but the new regions into which neurology must expand are in danger of being claimed by other departments of medicine and of becoming, in Dr. H. A. Riley's[3] apt phrase, a "neurologia irredenta." Neurology is being encroached upon by general medicine, by biochemistry, and by bacteriology, as recent developments in the treatment of subacute combined degeneration and of poliomyelitis, for example, illustrate. These encroachments are in the interest neither of the patient nor of medicine as a whole, but they are inevitable unless, as the horizon of neurology becomes extended, the range of vision of the neurologist enlarges proportionately. The view of neurology which Dr. Collier presents is essentially biological. The nervous system can no longer be treated in isolation from the rest of the organism, nor the organism in isolation from its environment. Progress in neurology requires of the neurologist not only readiness to co-operate with workers in many other fields, but also the insight to perceive when such collaboration can be fruitfully undertaken.

[1] *Lancet*, 1933, i, 19.
[2] *Nutrition and Disease*, Oliver and Boyd, 1934, p. 129.
[3] *Arch. Neurol. and Psychiat.*, 1933, xxix, 862.

NATURE AND TREATMENT OF PERNICIOUS ANAEMIA

Although liver therapy has altered entirely the outlook for cases of pernicious anaemia, speculation and experiment have not yet thrown light upon the essential nature of the disease. It is well that the state of our knowledge should be reviewed from time to time, and the memorandum[1] on the subject recently prepared by Dr. E. W. Adams gives an admirable account of the more important recent researches. Pernicious anaemia is characterized by a distinctive blood picture, achylia, and, in many cases, a combined degeneration of the spinal cord. That it is a deficiency disease is held by many. Castle has formed an interesting theory that there is a lack of a specific intrinsic factor which is present in normal human gastric juice and absent in that of pernicious anaemia. In the normal individual this intrinsic factor of the healthy gastric secretion interacts with an extrinsic factor present in the food to produce specific haemopoietic effects. That the extrinsic factor is allied to vitamin B_2 is suggested by the actively curative results of feeding with marmite in some cases. Wilkinson has brought forward evidence that the intrinsic factor is an enzyme-like body which, acting on a substance in the food, produces an active principle, and this active principle can be stored in the liver and stimulates the formation of red blood corpuscles. Since the stomach in pernicious anaemia has none of the intrinsic factor the normal stimulus to blood formation is absent.

Although these theoretical considerations leave much work to be done before a solution is obtained, there is no doubt that a new era in the treatment of pernicious anaemia was inaugurated by the discovery by Minot and Murphy of the efficacy of a diet with abundance of liver and muscle proteins in blood regeneration. This diet contained little fat, plenty of vegetables and fruits, and was especially rich in complete proteins and iron ; and observations soon showed that in liver a really effective treatment for this hitherto intractable disease had been found. Further work demonstrated that the effective principle in liver was contained in the non-protein fraction of liver substance, and liver extracts were prepared which appeared to be as efficacious as whole liver and presented certain other advantages. These liver extracts are now prepared in solid and liquid forms, and are designed for both oral and parenteral administration. Patients can take them more easily. They can even be given by the intravenous or intramuscular route, and thus a much more rapid action is obtained by small amounts of material. This rapidity may be essential in the initial treatment of severe cases. While for a time attention was mainly directed to the use of liver and preparations derived from liver, other organs of the body were examined as to their content of the pernicious anaemia factor. Tests indicated that desiccated stomach tissue is an agent at least as powerful as liver in combating pernicious anaemia ; but it is interesting that the stomach of the hog or some other carnivorous animal must be used in making gastric preparations, the herbivorous animals, such as cow and sheep, not being suitable. The effective principle in hog's stomach appears to be less stable towards heat than that obtained from liver, so that in preparation it is not heated above 45° C. Two cases of food poisoning have recently occurred from the administration of stomach tissue preparation, presumably because the degree of heat for drying the preparation is insufficient to kill pathogenic organisms. Beef, calf, fish, chicken, and pork liver are all effective if taken in adequate amounts. It is not necessary to nauseate the patient by giving the liver raw. Since the active principle in liver is fairly stable towards heat, it may be given lightly cooked. The average daily dose of liver may be taken as half a pound, though more may be needed at the outset of treatment. When the blood count reaches normal the quantity may be reduced, and the average maintenance dose is about a quarter of a pound daily. The necessary daily amount may be taken either at once or in divided doses. There is evidence, too, that the response is quantitative, so that a single large dose may yield the same response over a period of days as the same quantity divided into several doses. The effectiveness of the liver principle is more powerful when injected intramuscularly or intravenously ; smaller doses may produce the same effect, and much work has been done in preparing extracts suitable for parenteral administration.

Preceding the clinical improvement there is a temporary and often considerable increase in the number of young red blood corpuscles (reticulocytes) in the blood stream after feeding with liver or stomach preparations, and this reticulocyte response is a test of great value in confirming the diagnosis, foreshadowing the improvement, and showing the efficacy of the particular liver or stomach preparation that is being employed. At the present time the only way to test the efficacy of a new batch of liver extract or stomach preparation is by observing the reticulocyte response in a hitherto untreated case of pernicious anaemia. Formerly not all preparations were tested in this way, and some were placed on the market which were useless. Potent extracts, however, have a distinct place in treatment of desperate cases, where there is no time to wait for the slower action of oral ingestion ; and some patients prefer the intravenous or intramuscular route to the daily ingestion of liver or stomach preparations. For maintenance, depending upon the particular brand of extract and the nature of the case, the amount necessary for each injection may vary between 2 and 5 c.cm. ; and some patients may be kept well on a single injection at intervals of one to six weeks or more. Other measures are beneficial in treatment, but none can be substituted for liver or gastric preparation. Marmite has been found to be as satisfactory as liver

[1] Recent Researches on the Nature and Therapy of Pernicious Anaemia. By E. W. Adams, M.D. Ministry of Health, Reports on Public Health and Medical Subjects, No. 75. H.M. Stationery Office. (6d.)

in the treatment of the tropical macrocytic anaemias, but neither it nor other yeast preparations can replace liver, liver extracts, or stomach preparations in the treatment of pernicious anaemia. Iron is generally regarded as ineffective in this disease, but when certain complications are present the combination of liver and iron may be of great value. Iron is also of use in the presence of sepsis and arteriosclerosis, and in some rare cases in which, during treatment by stomach or liver, the red cell count outstrips the haemoglobin level.

RECENT WORK ON LEPTOSPIROSIS

In Holland Weil's disease has assumed considerable prominence, while the apparent immunity of England has been seriously questioned as a result of Dr. Hamilton Fairley's observations, published in the *Journal* of July 7th, 1934 (p. 10). During the last ten years 452 cases have been recognized in Holland, of which forty-six (10.2 per cent.) proved fatal. The disease, according to Professor Schüffner,[1] is commonest in the western coastal part of the country, and has its maximum incidence in the province of South Holland, where the case rate is 140 per million. The disease may appear in any month of the year, but the commonest time is July to October. During the hot summers of 1932 and 1933 the summer peak was very marked indeed, and was apparently associated with the increase in bathing. Infection may occur in a number of ways. Bathers in infected areas are exposed to serious risk. Persons who fall into canals, by accident or with suicidal intent, provide a number of cases. Bargemen, fishermen, and workers in slaughterhouses and other rat-infested premises contribute more than their due quota. Infection may also arise from dogs. Water becomes infected with *Leptospira icterohaemorrhagiae* from the urine of sewer rats. In Rotterdam, where cases of Weil's disease are fairly common, from 7 to 40 per cent. of all rats examined have been proved to be infected. The frequency depends largely, however, on the age of the rat. In young rats in Rotterdam no infections were found, while in Amsterdam only 3 per cent. of young rats proved positive. Adult rats, on the other hand, are infected up to a figure of 45 or even 60 per cent. The black rat rarely acts as a carrier. The survival of the leptospirae is determined to some extent by the salinity of the water. It was found that in alkaline water with not more than 40 mg. of chlorine per litre, the organisms survived for ten days or longer, in water with 1,700 mg. for three days, and in sea-water, with 17,000 mg., for only a few hours. Clinically, about 60 per cent. of cases show no jaundice. The true nature of the disease in these cases is suggested by the severe muscular pains at the onset, the heavily coated tongue, the albuminuria, meningeal symptoms, the shift to the left in the leucocyte formula, and, probably most striking of all, the flushed conjunctivae due to dilatation of the episcleral capillaries. Cases without jaundice are not fatal. The diagnosis has to be made finally by the bacteriologist. Though leptospirae can almost invariably be found by dark-ground illumination in the freshly drawn blood of infected guinea-pigs, they are rarely found by this method in human cases. They may be sought for, however, by light centrifugation of the blood and examination of a thick layer of the supernatant plasma. Cultivation of the blood is much more successful, either directly or after preliminary passage through the guinea-pig. The organisms are commonest in the blood during the first three or four days, but they may be found as late as the tenth day, especially in severe cases. After that they may be sought for in the urine. The most generally useful method, however, is the agglutination test, which becomes positive as the patient recovers. It is carried out with living, or preferably with 0.2 per cent. formolized, cultures. The most important advantage of using killed organisms is that the reaction is not obscured by the occurrence of lysis in the lower dilutions, thus allowing absorption of agglutinin experiments to be carried out. The main type of leptospira causing Weil's disease in Holland is *L. icterohaemorrhagiae*, but a second type, *L. canicola*, has been found as a cause of infectious jaundice in dogs, and of at least one case of human disease. These two organisms, which differ in virulence for guinea-pigs and in serological behaviour, are both different from *L. grippotyphosa*, the infecting agent in the swamp fever of Eastern Europe.

[1] Schüffner, W.: *Trans. Roy. Soc. Trop. Med. and Hyg.*, 1934, xxviii, 7.

GOLD THERAPY IN PULMONARY TUBERCULOSIS

In the front rank of those attempting to consolidate the position of chrysotherapy by accurately determining indications, dosage, and results must be placed Professor Sayé, whose book[1] elaborates the account he gave at the International Tuberculosis Conference at The Hague in 1932. After mentioning the various gold preparations employed in therapeutics, he summarizes the work of other authors with sanocrysin and then describes his own experience, based on 434 patients treated between 1925 and 1931. Rest formed part of the treatment in 342, 40 per cent. being in hospital and the remainder in their own homes, and ninety-two received the sanocrysin as out-patients. The author maintains that his results are particularly demonstrative, as, owing to the lack of sanatorium accommodation in Barcelona and the poor economic circumstances of the patients, less than 15 per cent. were able to undergo a *cura climática* on completion of the course of sanocrysin. In 131 patients only was some form of collapse therapy also instituted. The results, very satisfactory as a whole, are critically examined from different aspects, but in view of the heterogeneous material dealt with very little would be conveyed by quoting the figures. Rather should the results be studied in the clear and concise notes of the fifty illustrative cases and their accompanying excellently reproduced skiagrams. The indication *par excellence* is the early exudative lesion, whatever its extent, and sanocrysin will produce a complete and lasting cure more rapidly (and more conveniently) than will an artificial pneumothorax, and, moreover, with no residual fibrosis. This *nettoyage radiologique* may be

[1] *Crisoterapia de la Tuberculosis.* Por el Dr. Luis Sayé. Barcelona: Salvat Editores, S.A. (34 pesetas unbound, 39 pesetas bound in cloth.)

seen even with large "acute" cavities. Relative indications, with surprising results sometimes, are moderately advanced caseous and ulcerative cases, but here, too, it is chiefly the "infiltration," the "fresh spreading disease" of Gravesen, that is most influenced, often preparing the ground for some form of collapse therapy. Old-standing cases with much fibrosis, profound toxaemia, and severe tuberculous lesions elsewhere are contraindications. It is in regard to dosage that Sayé differs considerably from other authors. While the initial and subsequent doses vary according to the weight and general condition of the patient and the type of disease, in nearly 50 per cent. of the bed cases a dose of 0.8 gram or more is reached; in 40 per cent. the total amount was over 8 grams, and sometimes 20 grams or more. He maintains that such dosage improves and hastens the result, and is rendered possible by regulating the size and interval of doses according to the following principles. Small or single rises of temperature, slight transient albuminuria, and fleeting erythemas must be regarded as focal reactions and the next dose given after disappearance of the symptoms. Gastro-enteritic disturbances, dermatitis, and persistent albuminuria indicate metallic intolerance, and call for an increased interval and a similar or smaller dose. Repetition or multiplicity of intolerance symptoms indicates metallic saturation and compels cessation of treatment. Sayé claims to have reduced the intolerance symptoms to 10 per cent. and rarely to experience saturation syndromes, the appearance of which has also a prognostic value. The importance of the effect on the early exudative lesion—which is in line with the work of Gravesen and Christensen—cannot be overestimated. Routine examination of contacts and the "supposed healthy" is becoming established in America and Germany, and will undoubtedly develop in England. In this way the "early cases" so eagerly clamoured for will be discovered and the problem of dealing with them bound to arise. While Sayé admits the possibility of a spontaneous cure in a number of these, clearly no method is yet available for distinguishing the two types, so that "ambulant" chrysotherapy may offer us the best and most convenient solution. Professor Sayé's book has a lesson to teach, and it is to be hoped that an English translation will soon make its Spanish contents available to English readers.

GEE'S DISEASE

Eponyms are of more historical than everyday value, and therefore often tend to die out when the nature of the disease, the sign, symptom, instrument, or what not becomes more definitely established. Some, however, appear to be permanent exceptions, such as Bright's disease, which has an umbrella-like character, covering a number of physical sins; Graves's disease, which is less committal than exophthalmic goitre; and Addison's disease. Samuel Gee, an outstanding clinical teacher and personality at St. Bartholomew's Hospital in the last quarter of the nineteenth century, is an example of one whose name is now but little known eponymously. It was not ever thus. At one time posterior non-tuberculous meningitis was known as Gee and Barlow's disease, from their description in 1878 of what Still subsequently showed to be a chronic form of meningococcal meningitis. Gee's linctus was at the beginning of this century widely used for a mixture of equal parts of tinct. camphor. co., syrup of tolu, and oxymel of squill, the origin of which, according to tradition, was that a hospital patient mentioned the superior qualities and the miraculous cure obtained from the medicine given by the village lady bountiful, who on inquiry revealed its composition, and thus insured its further employment at St. Bartholomew's Hospital. A somewhat similar linctus at St. George's Hospital was once familiar as (J. W.) Ogle's drops. These are examples of how great clinicians may be best known on account of their least profound achievements. Addison's, or more correctly Baillie's, pill is another. In 1932 Izod Bennett, Donald Hunter, and Janet Vaughan[1] contributed a monographic and well-illustrated account of "idiopathic steatorrhoea (Gee's disease)," which Gee[2] described in children as coeliac disease in 1888, and C. A. Herter rediscovered twenty years later. The valuable article in 1932 was based on fifteen adult cases. In September last Izod Bennett[3] published, under the sole title *La Maladie de Gee*, a shorter account of this complex metabolic disorder. Thus may be revived abroad, and in a country where Trousseau in the past generously introduced the eponyms "Graves's disease" and "Addison's disease," the memory of a great British physician whose name in this country should be kept green by the collection of "Gee's aphorisms" made by his pupil and follower Lord Horder.

CARBON DIOXIDE FOR THE NEWBORN

The introduction of carbon dioxide in oxygen in a proportion of 5 to 7 per cent. for the treatment of various types of respiratory failure has an obvious application in the newborn, and workers in various centres have not been slow in availing themselves of this method. There are, however, certain details to be observed, which are well set out in a recent article[4] from Bordeaux by Drs. G. Péry, J. Cardus Llanas, and J. Duffour, the last-named being a "chemical engineer." The first step in the treatment of respiratory failure in the newborn, according to these authors, is to clear the respiratory passages of all obstruction, especially that by mucus. It is pointed out that excessive mucus provides a barrier through which carbon dioxide cannot penetrate, and it is also recognized that the pressures used in the insufflation of the carbon-dioxide-oxygen mixtures may well drive mucus still deeper into the pulmonary tissues unless it is first removed. While this principle is a most important one, it cannot be said that the method advised—nor any of those commonly employed—constitutes the ideal. The authors recommend that the baby be suspended by the feet and the back rubbed to encourage the passage of mucus to the pharynx, from which it is removed by means of a finger wrapped in gauze. Then a special insufflation tube is introduced into the trachea. It is obvious that, as such a measure appears to be necessary, a suction apparatus might well be then applied to extract mucus without such disturbance of the child as is indicated by the

[1] Bennett, T. I., Hunter, D., and Vaughan, J. M.: *Quart. Journ. Med.*, 1932, N.S., i, 603.
[2] Gee, S.: *St. Bart's Hosp. Rep.*, 1888, xxiv, 17.
[3] Bennett, T. I.: *Presse Méd.*, Paris, 1934, xlii, 1459.
[4] *Journ. de Méd. de Bordeaux*, April 30th, 1934, p. 315.

manipulations referred to. To the insufflation tube is attached a neat metal device consisting of a tube with a side inlet connected to the supply of carbon dioxide and oxygen. There is a movable inner tube, open to the air and also with a side opening. When this is depressed by the finger or thumb the carbon dioxide mixture flows into the trachea ; when released, a spring raises the inner tube and closes the inlet, and expired air escapes through the upper opening, from which the finger or thumb has been withdrawn. The supply of carbon dioxide and oxygen (5 to 7 per cent.) is contained in a rubber bag of five-litre capacity. During the inspiration phase the attendant presses down the metal tube with one hand and with the other squeezes the rubber bag with whatever pressure is deemed necessary for the individual child. During the expiratory phase the hand pressing on the metal tube releases this, while that used for the rubber bag is now transferred to the chest of the infant to compress the thorax. Artificial respiration is continued in this way until a satisfactory cry is produced. It is then recommended that the insufflation tube be removed and further carbon dioxide and oxygen given, by means of a mask if necessary. In the conclusions to the paper the authors also suggest that, if no response is obtained after artificial respiration in the manner described, lumbar puncture should be performed, followed by repeated measures to stimulate breathing. This would appear a drastic way of reducing intracranial pressure which, at such a period in neo-natal life, must be due to a large haemorrhage. The important points brought out by the authors are the absolute necessity of clearing all obstruction from the respiratory tract and the value of positive pressure insufflation into the trachea. The method recorded is certainly an advance towards the ideal when a combined suction and insufflation apparatus can be satisfactorily elaborated.

BILHARZIA DISEASE IN ENGLAND

Dr. J. B. Christopherson and Mr. R. Ogier Ward have lately published a note[1] on bilharzia disease in England, in which they describe the case of a young man who, on his return home to England from South Africa, suffered several attacks of haematuria and pain in the loins. Ova of *Schistosoma haematobium* were discovered in the urine by Dr. Cuthbert Dukes, and the authors give an account, with coloured illustrations, of the cystoscopic appearance of the bladder before and after intravenous injections of sodium antimony tartrate. The patient was kept under observation after treatment, and three years later, when last seen, he was in normal good health, and had been free from all urinary symptoms since the course of antimony. Bilharzia disease, though it not infrequently crops up in England, is always imported. There is on record nowhere a well-established case of the infection having been contracted in the British Isles. Biologically, the authors say, it would not appear impossible for the disease to thrive and to pass from one person to another in this country. "There are stretches of fresh water—for example, at Frensham and Fleet in Surrey, and in other localities—where soldiers bathe whilst at home from abroad in water which harbours species of snails which, given the opportunity, might function as the necessary intermediate hosts ; but there are few days in the year when the miracidium in the ovum would hatch out and survive in the free state and infect the snails. The British climate preserves the country from endemic bilharzia disease."

[1] *British Journal of Surgery*, 1934, xxi, No. 84.

LET THERE BE LIGHT!

Directors of research laboratories are not commonly noted for powers of vivid expression either in the spoken or in the written word. Dr. Matthew Luckiesh is an exception to this generalization. Since 1915 he has written a series of books on lighting. Some have dealt with the technical aspects of the matter, in others he has sought to bring technical achievements in illumination to the notice of the public. His latest book, *Seeing and Human Welfare*,[1] is a typical piece of propaganda. His theme is the folly, the costliness, and the danger of working or allowing anyone to work in a poor light ; and the wisdom, the economy, and the safety of providing a superabundance of light. In a former book his enthusiasm for artificial lighting led him to suggest its superiority over the variable natural light for interior illumination. Here his text might be the splendour of sunlight and the poverty of our common conception of artificial light. The intensity of illumination at midday in summer has been nearly as high as 10,000 foot-candles ; even in the shade of a tree it is about 1,000 foot-candles. Daylight indoors is restricted by windows, and its distribution is often unsatisfactory ; there may be 200 foot-candles near the window, and only 2 foot-candles ten feet away. A 100-watt lamp may give a light equivalent to 100 candles at a distance of one foot, but the intensity of illumination ten feet from it is about the same as that of one candle at a distance of one foot—a wholly inadequate light for detailed work. Dr. Luckiesh discusses the visibility of objects and the illumination required for various types of work. In all categories he demands standards about twice as high as are commonly accepted ; and his standards, he says, are not ideal.

LEWISHAM HOSPITAL

Lord Dawson of Penn asks us to give him an opportunity—and we gladly do so—of amplifying his speech at the opening of the Lewisham Hospital extension on October 9th.[2] "To praise Dr. Nockolds, the medical superintendent," Lord Dawson says, "is no mere compliment ; the Lewisham Hospital owes a large part of its attainments and reputation to his excellent administration. In my reference to the matron I wished to pay tribute to the admirable nursing school at the Lewisham Hospital and the educational reputation it has gained under her direction."

The fifth annual reports of the National Radium Trust and Radium Commission, for the year 1933–4, are published to-day by H.M. Stationery Office (Cmd. 4711. 9d.).

[1] *Seeing and Human Welfare*. By Matthew Luckiesh, D.Sc. Baltimore: The Williams and Wilkins Company ; London: Baillière, Tindall and Cox. (11s. 6d.)

[2] *British Medical Journal*, October 13th, p. 684.

ONE HUNDRED AND THIRD ANNUAL MEETING

of the

British Medical Association

MELBOURNE, 1935

THE British Medical Association will hold its 103rd Annual Meeting in Melbourne, Australia, during the week beginning September 9th, 1935, under the presidency of Sir Richard Stawell, K.B.E., M.D., consulting physician to the Melbourne Hospital. On three occasions—in 1897, 1906, and 1930—the Association has met outside the British Isles, and each time in a Canadian city. The Sectional sessions for scientific and clinical work will be held on Wednesday, Thursday, and Friday, September 11th, 12th, and 13th, the mornings being given up to discussions and the reading of papers, and the afternoons to demonstrations. The Annual Representative Meeting for the transaction of medico-political business will take place in London at the Association's House on Friday, July 19th, and following days.

Members travelling to Australia through the United States will sail for New York from Southampton on Saturday, July 27th; if travelling by the Canadian route to San Francisco, they will sail for Montreal from Liverpool on July 26th, or from Glasgow on July 27th. Particulars of the two routes were given in our *Supplement* of March 10th. All arrangements in connexion with the journey are in the hands of the Financial Secretary and Business Manager, B.M.A. House, Tavistock Square, London, W.C.1, to whom early application should be made for further details, and for reservation of places on steamers and trains and at hotels. Members who cannot afford to be away for the whole time of the "round-the-world" tour, but who wish to attend the meeting, may leave London on August 8th, travelling overland to Toulon and embarking there on a P. & O. liner which arrives at Fremantle on September 3rd. The journey on to Melbourne takes three days by rail, so that those who follow this route will reach their destination on September 6th, three days before the meeting opens. On the social side those responsible for organizing the Melbourne programme are making every effort to ensure that the event shall be worthy of the occasion, and a very warm welcome may be counted on from our Australian colleagues. During the outward and homeward journeys the official B.M.A. party from the British Isles hopes to establish personal contact with many other Branches of the Association.

The honorary local general secretary for next year's Annual Meeting is Dr. J. P. Major, Medical Society Hall, East Melbourne, Victoria. The names of the Presidents of the fourteen Scientific Sections were given in the *Supplement* of August 25th; and the full list of officers, with provisional programmes, etc., will appear in subsequent issues. We publish below the first of a series of descriptive and historical articles on the city of Melbourne and its medical institutions.

A HISTORICAL SKETCH OF THE CITY OF MELBOURNE

For forty-five years after the first settlement of Australia the fertile region which is now the State of Victoria remained practically unoccupied. Twice had an official outpost been established on its shores, only to be withdrawn again after a short period; and once, in 1824–5, an exploratory journey from the outlying settlements of New South Wales had revealed the country lying back from the coast as well fitted to carry the flocks and herds which were becoming the principal preoccupation of enterprising settlers. From the island colony of Tasmania, where accessible sheep-lands were limited, longing eyes were being cast on the virgin pastures just across the straits; and at length, in November, 1834, the ice was broken by a bold adventurer, who planted himself on the shores of Portland Bay. A few months later several Tasmanian colonists visited Port Phillip to view the country, and in September, 1835, two rival parties, organized respectively by John Batman and John Pascoe Fawkner, camped side by side on the banks of the Yarra River at the head of Port Phillip Bay. From this encampment sprang up a small straggling village of turf huts and one or two weatherboard houses, which was the progenitor of the city of Melbourne.

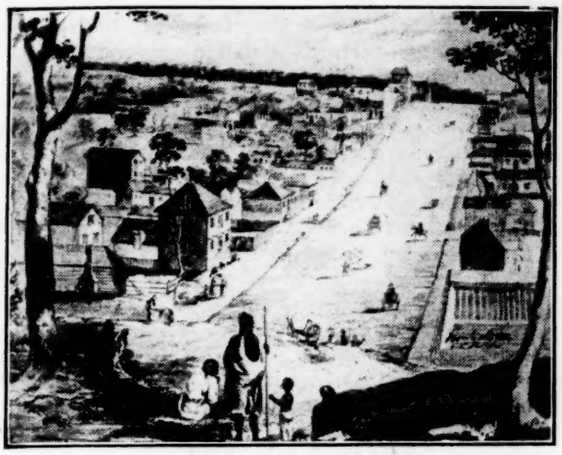
It was the policy of the British Government at that time to discourage the dispersion of settlers beyond certain defined limits in New South Wales, and in duty bound the Governor of the Colony issued a notice warning off the intruders from the south. At the same time he wrote to the home authorities pointing out the impossibility of restraining the spread of pastoral occupation, and suggesting that he should be authorized to bring the newcomers under official control by establishing a regular township on the southern coast. This suggestion was adopted, and in September, 1836, twelve months after that first encampment at Port Phillip, Sir Richard Bourke sent a police magistrate thither to take charge of affairs.

In March, 1837, the Governor himself journeyed south to decide upon the site of the new town. "I found on my arrival on the spot selected for a settlement . . . on the banks of the Yarra River," he reported to the Secretary of State, "an assembled population consisting of from sixty to seventy families. The situation appearing to be well chosen, I directed a town to be immediately laid out, which your Lordship will perceive from the map has received the name of Melbourne." Streets were pegged out without regard to existing habitations, and on June 1st, 1837, the first sale of building allotments was held. With the country round about it filling up with pastoralists from Tasmania and also from the older settlements of New South Wales, the new town made at first phenomenal progress. By the end of 1839 it must have had a population of something like 3,000, and in 1842 it was deemed of sufficient importance to be incorporated and to have a mayor and town council.

Notwithstanding the wave of financial depression which followed the "boom" of the early 'forties, Melbourne had by 1845 acquired several respectable places of worship, a theatre, and one or two substantial Government buildings. The official census of the following year showed a population of 10,000; and in 1848 the town was made the see of the bishop and raised to the dignity of a city.

Victoria Becomes an Independent Colony

After several years of agitation the Port Phillip district was separated from New South Wales, and became the independent Colony of Victoria in 1851. Following hard on this event came the discovery of rich goldfields within its boundaries and a rush of immigration, mainly from Great Britain, to the new Eldorado. From 1852 to 1854 the average number of oversea arrivals in Victoria was 90,000 per annum. Although Melbourne was now a city with 20,000 inhabitants, it could not cope for long with the demands made for accommodation by this horde of gold seekers. The result was the growth of a large camp on the waste lands to the south of the river, which at one time held nearly 5,000 people. "Canvas Town," as it was called, was under the control of the Crown Lands Commissioner, and was laid out in regular streets and lanes; but it was only a temporary expedient, and by 1854 it had begun to dwindle out of existence. Things were settling down, and the huge access of population was making itself felt by causing rapid suburban expansion and stimulating social developments generally.



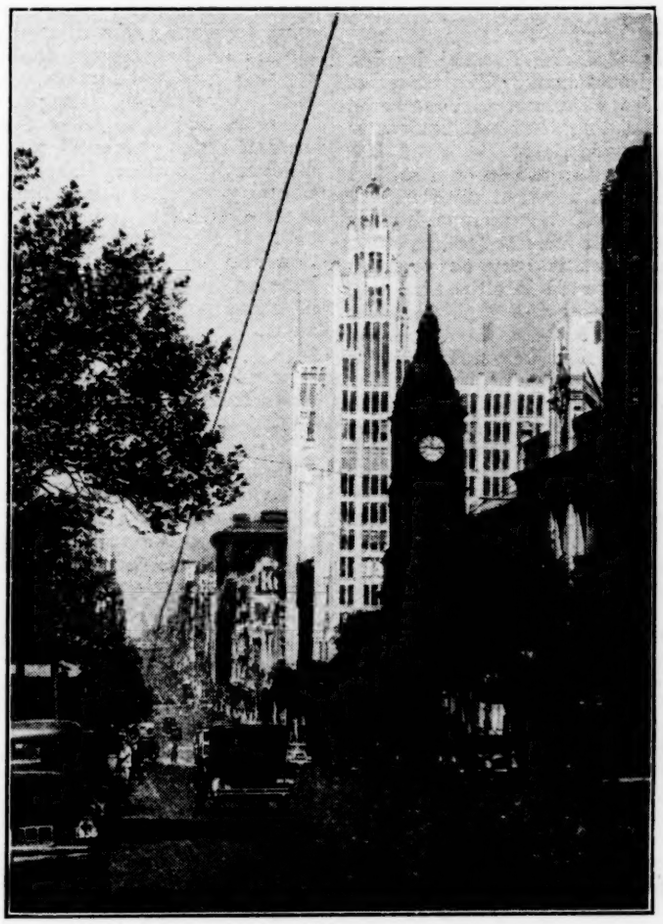
Early View of Collins Street.

Collins Street in the 'Seventies

The "Land Boom" and Its Effect on Melbourne

Between 1854 and 1859 Melbourne held its first exhibition, in a miniature "Crystal Palace" hastily erected in William Street. A suburban railway system was inaugurated, and a university and a public library were founded; a water-supply and gasworks were established; footpaths were paved and roadways macadamized; a volunteer fire brigade system was developed; the first town hall was erected—a remarkable record for a city little more than twenty years old. Three large theatres were also built, and extensive Government buildings, including stately Houses of Parliament, were begun.

By 1861 Melbourne and its suburbs, most of which now had municipal councils of their own, housed 140,000 people. The older city of Sydney was left far behind, and for a full forty years Melbourne was the leading centre of population. The 'sixties and 'seventies was a period of steady progress, with the growth of buildings, especially of churches, of an increasing dignity, but without any spectacular developments. The great International Exhibition of 1880–1, however, ushered in an era of striking changes, surpassing even those of the "gold rush" period. Between 1881 and 1891 the population of Melbourne increased from 282,000 to 490,000. Capital was pouring into the country for investment, and speculation in land was feverish and extravagant. It was indeed a time of artificial prosperity, known to later generations as the "land boom"; but its permanent effects on the city were remarkable. From a fair-sized provincial town it was transformed into a modern metropolis. Buildings eight and nine stories high sprang up as if by magic. A cable tramway system was constructed, and electric light and telephones were introduced. The course of the river was widened and straightened, eliminating the danger of floods, which had been a recurring trouble in the past, and new and handsome bridges were erected to connect the northern and southern portions of the metropolitan area. A Melbourne Metropolitan Board of Works was constituted, and the installation of a modern sewerage system was begun.



Collins Street, Melbourne, 1934.

The " boom " was followed by a severe depression, fortunately mainly local and therefore temporary. In a few years there were signs of recovery, and with the inauguration of the Commonwealth in 1901 Melbourne again came into prominence as the temporary seat of the Federal Parliament, which met there for over a quarter of a century, pending the building of the Federal capital. In 1906 electric tramways were introduced, which have gradually replaced nearly the whole of the older cable ones, and between 1918 and 1925 the entire suburban railway system was electrified, providing a passenger service well able to stand comparison with that of any city in the Old World.

The Modern City

Greater Melbourne of to-day covers an area of 200 square miles, and includes some twenty-seven or twenty-eight independent cities, with a total population of nearly a million. It has 146 miles of tramways, and its parks and gardens have an area of over 8,000 acres. The latter include the beautiful Botanical Gardens, situated on the banks of the Yarra close to the city, and the Treasury and Fitzroy Gardens, which are on the confines of the business centre. A broad, leafy boulevard, the St. Kilda Road, leads southward from the Prince's Bridge, adorned by numerous statues and monuments, and its vista closed in by the great War Memorial Shrine erected between 1928 and 1932. At the entrance to the city stands St. Paul's Cathedral, erected nearly fifty years ago, but its graceful spires only recently completed. The Town Hall and Elizabeth Street Post Office are both buildings worthy of a great metropolis, and the Public Library has a reading room similar in construction to that of the British Museum, but much loftier. The same building houses the National Gallery, one of the most richly endowed galleries of the British Empire.

At the east end of the city stand the Houses of Parliament and the principal Government offices, besides Melbourne's second cathedral, St. Patrick's. To the north lies the University, occupying, with its affiliated colleges, over 100 acres of ground, and attended by some 3,000 students. Beyond the spreading miles of suburban streets one can glimpse a distant view of surrounding hills, and it is among these that the people of Melbourne build the week-end homes to which they retreat in the summer season ; while southwards, along the eastern shores of Port Phillip Bay, stretches a long line of watering places equally favoured in the holiday season.

A. W. Greig.

HEALTH AND HUMAN PROGRESS

A MEDICO-SOCIOLOGICAL SURVEY

L'Economie Humaine par la Médecine Sociale[1] by Dr. René Sand is a really remarkable book. The writer of this notice has had occasion to read, and to be grateful to, many books on medical sociology, but this book is in a class by itself. The previous work of Dr. Sand had made it clear that anything coming from him on a subject he has made his own was to be received with respect and gratitude, but into this particular volume he has poured all his great knowledge and his gift for attractive presentation in such measure that it may be regarded as the complete guide to all interested in citizenship and not least to the medical profession ; and it is not only a guide, but an inspiration. M. Herriot, in a preface, says that Dr. Sand's programme may be summarized as a " demand that we make use of progress instead of being subjected by it." The thesis of the book is that human life could be so much richer for all than it is now if we would take the trouble to make it so ; that much progress has been made but that much still remains to be done ; and that medicine in its widest sense has been a very great factor in human progress and will be even more important in the future.

The difficulty about a book so rich in material is to select. Every chapter might well form the subject of an article. Dr. Sand sees in the widely spread reduction of the birth rate something which is forcing the politicians of the world to realize that preventable sickness and premature death are an intolerable waste of human material, and that social medicine is a factor in human economy which must be encouraged and organized far more than it has been. He shows with a wealth of illustration that " we can buy human life, and every country fixes for itself, within certain limits, its own death rate." He defines social medicine as the art of prevention and cure considered as " something which links the health of men to their condition as human beings." He classifies the elements of the populations of various countries according to their financial resources, and arrives at what he calls a balance sheet of sickness and death. He points out that the increase in deaths in certain categories is a sign of progress when the deaths occur at the more advanced ages.

In an interesting survey of the causes of death (in which great appreciation is shown of the returns of our Registrar-General) Dr. Sand shows that, after tuberculosis, the most frequent cause of death in young women is childbirth, and he suggests that the stationary or even increasing maternal mortality rate is probably due to the results of abortion, though he admits that it is difficult to secure figures to prove this. According to confidential medical reports received from certain German towns the number of abortions there exceeds that of accouchements. Contrary to what might have been expected, at any rate in this country and in New Zealand the deaths from external causes have not increased in spite of mechanization and the motor car, nor is urbanization tending to increase the death rate, the infantile rate in the towns in many countries being lower than that of the rural areas, though in the later ages the country has an advantage. In these matters as in all others the author's conclusions are supported by figures and illustrations taken from all countries.

Health and Income

On the financial cost of sickness he is very illuminating, and his discussion in Chapter V of the argument that the effects of natural selection are paralysed by hygienic measures is worth serious consideration. He is convinced that health depends mainly on income, and he goes into much detail regarding the physical differences at different ages of the various classes of population. His examinations in Chapter VI of " The Inequality of the Classes in Respect to Sickness and Death " and in Chapter VII of " Heredity and Environment," lead him to the conclusion that, " in general, heredity and selection are not the dominating factors in the biological inequalities ascertained as between the several classes." He discusses very fully the theories of the Karl Pearson school, and gives his reasons for dissenting from them.

There is a topically interesting footnote in Chapter VIII on " Heredity Factors," in which he says that the now widely spread opinion that unions between groups ethnically different (Nordic, Mediterranean, Alpine, etc.) are unfavourable from the hereditary point of view is not proved. " Each ethnical group has its own ' hereditary patrimony ' which in total is different, but it has not been proved that any one of these patrimonies is in total superior from the biological point of view, and, besides, very few, if any, nations have a homogeneous ethnical population. The Jews were already a composite nation before

[1] *L'Economie Humaine par la Médecine Sociale*. By René Sand. Preface by M. Edouard Herriot. Paris: Les Editions Rieder. 1934. (30 fr.)

their dispersal." He estimates that the population of the world has quadrupled since the eighteenth century and doubled in the nineteenth, and gives figures showing the countries in which the population is increasing, stationary, or decreasing.

On the question of contraception he points out that in Holland, where for thirty years the teaching of contraceptive methods has been legalized and encouraged, the birth rate is 20 per cent. higher than in Belgium, where such teaching is prohibited, and suggests that from the point of view of morals Holland has no reason to fear comparison with its neighbour. Dr. Sand gives much information as to the various suggestions put into practice from the eugenic point of view, and is against family allowances, premiums for births, and assistance to large families, on the ground that these methods encourage the inferior as much as the superior.

Chapter X, on "Professional Factors," gives a full résumé of the rates of mortality in different callings, and figures relating to morbidity, where such are available. There is an interesting discussion whether the higher mortality rate of women workers is due to sex or to the economic factor which compels married women to work. The Baltimore inquiry, which he frequently quotes, showed that even in comparable economic groups the fact that a mother worked away from home had a detrimental effect on the health of the children, but he sees no reason why this need be so, given proper organization.

Medicine and Industry

The section on the connexion of medicine with industry is very full, and the author points out that this is no new thing, for so far back as 1575 a book on this subject was published by a Spanish physician, Juan Huarté, which had no fewer than twenty-five Spanish and thirty-six other editions. After an acute analysis of the evils caused by industrialism to the individual and the family Dr. Sand concludes that it could easily be turned to the physical, mental, and moral advantage of those concerned, and he gives examples. He is convinced that the slum and unemployment are the two main barriers to the progress of human society. He emphasizes the necessity of promoting the dignity of labour, and points out that in New Zealand, which has done most in this direction, there is not only a lower death and sickness rate than in any other country, but less discontent. Dealing at considerable length with the housing question he concludes that a workman should not be obliged to pay more than one-sixth of the family income in rent.

In his later chapters he further emphasizes his doctrine that all our material existence is conditioned by income, which not only affects health and comfort but intellectual life and morality. Poverty is the enemy. In the long run the community pays for the deficiencies of the employer. Wages inferior to human needs cannot be justified, and, whereas up to the middle of the nineteenth century "neither the peasant nor the townworker could be assured of his daily bread, to-day whole nations are now so rich that all could be properly nourished, housed, clothed, and educated."

Social Insurance and the Health Services

He is strongly in favour of social insurance as a preventive of poverty, but believes that the ideal system is one which gives the insured person an interest in not making claims, so that he can make use of money which has been saved by his self-denial for other purposes. Discussing the part played by public and private effort he believes in both, but decides that the major role must be undertaken by the community. The example of the United States of America shows that private effort, however generously supported, cannot take the place of social insurance.

In Chapters XII, XIII, and XIV Dr. Sand makes many suggestions for further advances. He deprecates the waste of effort involved in the multiplication of agencies very imperfectly co-ordinated. He favours health centres, and alludes to the proposals of Lord Dawson's Committee and the experiment of Drs. Scott-Williamson and Pearse, but thinks it is wasteful to dissociate preventive and curative medicine. The hospital should be the centre for all health work, and he urges the medical profession in this matter to be not only preventive and curative but constructive. Education, though invaluable, will not deliver the individual from his prejudices and weakness, as is shown by the "unpardonable hygienic misconduct of even the best-educated people." The teaching of hygiene in schools is absent in many countries and very imperfectly developed in all. "One becomes an engineer or an officer without having any conception of the role of hygiene in the workshop or the regiment; one founds a home knowing little or nothing of domestic hygiene or how to bring up children."

The book of 285 pages, with a bibliography and list of authors cited, ends in a chapter of sound reasoning and sober eloquence in which an optimistic note is struck, in spite of the sentence in which the author declares: "There are whole continents in which people live under the weight of poverty and disease; for many human beings life is still narrow and sordid: technique serves but dominates us; work is deprived of its joy; thirty million unemployed denounce the incapacity of their rulers; and the spectre of war is not yet laid. Is our task impossible or merely unfinished?" Dr. Sand leaves us in no doubt that in his opinion, given the necessary vision, good will, and organized capacity, the liberation of the world will go on, and that in the future as in the past the medical profession will play a great part, though it must realize far more than it does now the necessity for co-operation with other agencies.

The figures and examples given by Dr. Sand come from nearly all countries, but it is gratifying to find that the author frequently has reason to quote British practice, and his acknowledgements of Sir George Newman's work are frequent and handsome.

We have necessarily given a cursory view of a great book, full of information, practical suggestion, and inspiration. It calls urgently for an English translation, which should be brought to the notice of all who are interested in the important problems it discusses.

Researches conducted during 1933 at the South African Institute for Medical Research included the testing of the potency of concentrated anti-plague serum; this was found to correspond almost exactly with the degree of concentration, thus indicating that concentration up to four times the strength could be achieved. It is stated also, in the annual report of the Institute, that prophylactic pneumonia vaccine for native miners has continued to prove highly satisfactory. A publication embodying the results of the extensive experimental and other work performed in this connexion will be issued shortly. Studies of pneumonia on the Witwatersrand prove that in the native, at any rate, a pneumococcus of the heterogeneous Group IV can be responsible for acute respiratory conditions. All the meningococci recovered from patients during the year proved to be aberrant strains, showing no correspondence with agglutinating meningococcal sera of the recognized local or oversea groups. Rabies infection is assuming more serious proportions in South Africa, and now threatens households through the cat, the tame merecat, and, occasionally, the dog. It has been shown that the rabies vaccine used locally has some value in protecting rabbits against a fatal dose of South African rabies street virus. Attempts to secure early diagnosis of cancer, by various serological methods, proved unsuccessful. An inquiry into the causes of malnutrition has been inaugurated on a broad basis. Data are being collected as regards the heights and weights of children and young adults, and also on the lines recommended by the American Children's Health Association, which are based on comparison of the relations between height, chest width and depth, hip width, and arm circumference—discarding weight as being fallacious. This will pave the way for subsequent study to be undertaken of the values of various foods.

MOTOR CARS FOR 1935

THE OLYMPIA SHOW

[From our Motoring Correspondent]

(*Concluded from page 693*)

Coupled with their efficiency for modern conditions of traffic, which render exceptionally high speed almost impossible, the existing economic stringency has resulted in cars of 10 horse-power continuing to form one of the most popular types, and, despite the reduction of 25 per cent. in the annual tax as from January 1st next, it would seem that manufacturers are anticipating a continuance of "Ten" popularity, inasmuch as such cars are now being built by no fewer than six makers—namely, Austin, Ford, Hillman, Morris, and Standard, with the Singer Company producing both 9- and 11-h.p. vehicles.

A Price Analysis

An analysis of car prices tends to indicate that the vehicles most suitable for medical men fall in the £250–£350 category. Even below these figures there is a wide selection of cars which will fully meet the needs of many doctors and give satisfactory service. Thus up to £150 there is a choice of five covered cars—the remodelled Austin Seven, the 8-h.p. and 10-h.p. Fords, the new Morris Eight, and the Standard Nine. Between £150 and £200 there is a selection of nearly fifteen models, ranging from the Austin Ten at £158 to the Wolseley "Hornet" at £198 10s. Again, between £200 and £250 there are no fewer than sixteen different cars, from the Vauxhall Light Six at £205 to the new front-wheel-drive Citroën at £250. Noteworthy cars in the £250–£300 group are the 16- and 20-h.p. Hillmans at £269, and the 16- or 20-h.p. Morris Oxfords at £285, all with six-cylinder engines. Finally, between £300 and £350 there are the Lanchester Ten and the B.S.A. Six, both with self-changing gear, and the Vauxhall Big Six.

Increasing Popularity of Coupés

As mentioned last week saloons continue the most popular in motor body designs. A walk round the Exhibition reveals, however, that it is now being closely pressed by the coupé type of vehicle, this being mostly of the foursome variety—that is to say, having accommodation for four people. As, however, this type is what is known as close-coupled, the leg room for the rear passengers is not usually so liberal as in a saloon. Much ingenuity has been shown in the design and construction of coupé drop-heads, which enable the car to be used either entirely or partially open, or completely closed.

In the following notes on the different makes of car on view reference is only made to those which, in design and cost, are likely to appeal to doctors.

Armstrong-Siddeley and Austin

Only detail improvements have been found necessary in the range of Armstrong-Siddeley six-cylinder cars, which are notable for their preselective self-changing gear-box. The popular 12-h.p. saloon has been reduced from £300 to £295, or with special equipment £305, while for those requiring a more powerful car with greater passenger room there is a 15-h.p. saloon at £435 and a new 17-h.p. model at £465. The Austin Company is for the 1935 season retaining its range of cars from the "Seven" to the "Twenty," but with numerous improvements, including synchromesh gears on three of the four speeds, sloping radiator front, and a combined luggage carrier and spare wheel compartment. The popular "Baby" has been largely redesigned, and has been reduced in price, the saloon with fixed head being now listed at £112, or with sliding roof £128. Useful models for doctors' use are the Austin 10-h.p. saloon at £172 10s., or cabriolet at £178; the "Light Twelve-Four" and "Twelve-Six" at £218 and £235 respectively, the last-mentioned being available with either 13.9- or 15.9-h.p. engine at the same price, and the old but modernized 12.8-h.p. four-cylinder car, with five types of saloon body, costing from £275 to £325.

British Salmson, B.S.A., and Citroën Cars

An interesting newcomer is the British Salmson 12/55-h.p. four-cylinder car, which with saloon body is priced at £395. Continuing its distinction of being, with the Lanchester, the lowest-powered vehicle available with the Daimler fluid fly-wheel and preselective change-speed gear, the B.S.A. 10-h.p. car embodies only detail improvements, except that a model with a slightly longer wheel-base has been added. Prices of saloons range from £210 to £245. The chief B.S.A. innovation is the introduction of a 12-h.p. six-cylinder car embodying all the chief features of the "Ten," available in either saloon or fixed-head coupé from £315. Reference was made last week to the new Citroën 12-h.p. four-cylinder car with front-wheel drive and special body work contrived so as to obviate the employment of the usual chassis frame. Although a striking departure from the usual practice, the new vehicle has been subjected to exhaustive tests, and has become very popular in France. As a saloon it is listed at £250. Other Citroën cars of conventional construction and improved in detail include a "Ten" (11.8-h.p.) saloon at £225, a "Light Twelve" at £235, and a "Big Twelve" at £245, all with four-cylinder engines, and a six-cylinder "Light Twenty" at £285.

Crossley, Daimler, and Fiat

Of the four Crossley cars for the coming season the one which attracts attention is the 10-h.p. four-cylinder "Regis," which at £325 now embodies as standard a four-speed preselective self-changing gear-box, as well as detail improvements. The "Balilla" 11-h.p. car of the Fiat Company is continued, but with a slightly longer wheel-base, providing more room in the pillarless four-door saloon. The gear-box now also provides four speeds—two of which are synchromesh—instead of only three. The price is £210. There is also the 15-h.p. "Ardita" four-cylinder saloon, which has been reduced from £375 to £350. The Daimler 15-h.p. six-cylinder car, the price of which remains at £450, while subject to the same tax as hitherto, has been provided with a slightly longer stroke engine; the body work has also been improved in detail.

Ford and Hillman

The 1935 range of Ford cars—not at Olympia, but at their own display at the Royal Albert Hall—is attractive. The Ford "V–8" is probably the cheapest eight-cylinder car on the market. Chief sales during the past year have, however, been of the popular little 8-h.p. four-cylinder car, which is being continued at reduced prices, while to the range has been added a similar car but with 10-h.p. engine, selling as a two-door saloon at only £135 and with four doors at £145. Numerous detail improvements have again been introduced in the popular Hillman "Minx" 10-h.p. cars, the prices of which in saloon form range from £159 to £185, or £225 for a foursome drop-head coupé. The principal innovation is a four-speed gear-box incorporating the synchromesh principle on all speeds. For medical men requiring a more powerful and more roomy car there is a family saloon with either 16-h.p. or 20-h.p. engine at £269, or in *de luxe* form at £295.

Humber, Jowett, and Lanchester

Although the Humber productions consist chiefly of cars of relatively high horse-power, the range includes a 12-h.p. four-cylinder, the price of which, in view of the many detail improvements in both chassis and body work, has been raised from £265 to £285. The gear-box of this car has now synchromesh gears on all four speeds. Despite the fact that the 7-h.p. Jowett continues as the only car having a two-cylinder engine, its reliability and low running costs have secured for it the support of many motorists. The standard sliding-roof saloon, which sells at £160, has been improved in detail, particularly as regards the mounting of the engine to obviate any vibration. There is also the "Kestrel" *de luxe* saloon at £175, in which a controllable free-wheel is provided in connexion with the four-speed gear-box, and a "Curlew" saloon at £185, which, in addition to the free-wheel, has a special centrifugal clutch. The chief innovation in the Lanchester programme is that, while continuing the four-cylinder "Ten," the makers have introduced a new 12-h.p. model on the same chassis but with six-cylinder engine. Both cars are of high-grade construction, and

embody the Daimler fluid fly-wheel and four-speed self-changing gear. Prices of the "Ten" saloons range from £310 to £335, and of the "Twelve" from £365 to £375.

Morris, Riley, and Rover

The chief feature of the 1935 Morris programme is the introduction of an entirely new "Eight" four-cylinder car replacing the "Minor" of former years. Mounted on a special box-section frame, the saloon body has comfortable accommodation for four persons, while the fittings and accessories are as comprehensive as those on the larger cars. At £120 for the two-door and £130 for the four-door fixed-head saloons—sliding roofs costing an additional £12 10s.—it is a model that is bound to become very popular. The "Ten-Four" and the "Ten-Six," two noteworthy Morris productions, have only been improved in detail and provided with slightly larger tyres, a similar description applying to the two models hitherto known as the "Cowley," but now styled the "Twelve-Four" and the "Fifteen-Six." The Morris "Oxford," a very popular car with many medical men, is continued with but slight changes at £285 for the fixed-head saloon and £305 for a sliding-head coupé, a choice of either 16- or 20-h.p. engine being also given. A change in the Morris cars which may be briefly mentioned is that the accelerator pedal is now at the right of the brake pedal instead of central as hitherto. A wider choice of external body colours in either single or double tones is also now available. The Riley cars, which are mainly of the sports type, may appeal to many of the younger members of the medical profession. The "Nine" is being continued with detail improvements, and, known as the 1½-litre model, there is a new 12-h.p. four-cylinder car with saloons at £335 and £345. For 1935 the Rover Company is producing two four-cylinder cars—10.8 and 11.9 h.p.—with saloons at £248 and £278, and two "Sixes," of 13.8 and 19.8 h.p. Such features as the clutchless gear-change and controlled free-wheel are being retained, while new points of merit include automatic chassis lubrication and the rust-proofing of all exposed metal parts of the chassis.

The Singer and Standard Cars

The Singer Company has a very attractive range of cars for the 1935 season, notable, on certain models, for such innovations as the "fluidrive" transmission and independent front-wheel suspension. The "Nine" four-cylinder saloon costs either £162 10s. or £185 in *de luxe* form, and the 11-h.p. car £245 as a saloon or £275 as a drop-head coupé. There are also 14-h.p. and 16-h.p. six-cylinder models with saloons at £259 and £295 respectively. Mechanically, the Standard cars show but little change from last year, but the body work has been brought into line with modern tendencies. At the lower end of the scale is the "Nine," at saloon prices ranging from £145 to £175. Next are the "Ten," of which five types are available from £185 to £245, and the "Twelve" at £219 to £239. In addition to these four-cylinder cars there is a "Sixteen-Six" *de luxe* saloon at £285.

Vauxhall and Wolseley

The Vauxhall Company provided one of the Show surprises by the introduction of a new version of the "Light-Six" car, which has proved very popular during the past year. The chief innovation is the adoption of independent front-wheel or "knee-action" springing, which is claimed to result in much more comfortable riding, especially when travelling over bad roads. Other improvements comprise lower and roomier body work, a built-in luggage boot, and an easy jacking system. Retaining the "no draught" ventilation arrangement and synchronized easy gear-change, this 12-h.p. car is now priced as a standard saloon at £205, or in *de luxe* form with either 12-h.p. or 14-h.p. engine at £225. Another Vauxhall production which is proving very successful is the "Big Six," which, with either a 20-h.p. or 27-h.p. power unit, is priced at £325. The Wolseley Company is continuing its popular "Nine" four-cylinder car, which as a saloon costs £179, and the 12-h.p. six-cylinder "Hornet" at £198 10s. The latter is now fitted with a special preselective three-speed gear-box. New six-cylinder models are seen in a 14-h.p. four-speed saloon at £240 and an 18-h.p. at £340. A Crossley with engine at the rear is not being shown this year, the only British car of this type being the 10-h.p. Trojan, a feature of which is the employment of a four-cylinder two-stroke power unit. Curiously enough, the only other rear-engined vehicle in the exhibition is located on the adjoining stand of the German Mercédès-Benz Company. This is a 12-h.p. four-cylinder vehicle with the engine, gear-box, and differential mounted as a unit behind the back axle, which latter is carried by two powerful spiral springs in place of the usual semi-elliptics.

Tyres and Car Service

The tyre section, while revealing no startling departures, shows that the competition between the different manufacturers is such as to result in even better tyres than ever, as much as regards their non-skidding qualities as their long-wearing life. Once a prolific cause of trouble and worry, the modern tyre, when accorded a modicum of regular attention, especially as regards the maintenance of the recommended air pressure, may be depended upon for many thousands of miles of reliable service. The Avon Company is continuing its duo-tread tyre introduced a year ago, while the British Tyre and Rubber Company (formerly Goodrich) has introduced a tyre incorporating in the construction of the cover what is known as a "golden-ply" impregnated with rubber compound, which is said to be heat-resisting, and consequently ensures freedom from tyre bursts.

Although of interest chiefly to the trade, a visit to the garage and service station equipment section of the exhibition reveals the many noteworthy appliances which are now available for the rapid and efficient carrying out not only of chassis lubrication and tyre inflation, but for such renovation and repair work as cylinder boring, valve grinding, decarbonizing, brake testing and relining, etc., all of which should have their effect in keeping users' car maintenance costs down to the minimum.

Accessories

The galleries of the Show are always worth a visit, as they usually reveal a number of accessories which add to the comfort, and on this occasion the safety, of motoring. Space prevents any lengthy reference to this section of the exhibition; attention may, however, be drawn to a few of its features, such as the numerous anti-dazzle headlights and devices, radiator muffs for winter use, and the stoves, etc., for keeping the garage warm during the night in very cold weather. To the list of Price's "Zero" radiator glycerin and other anti-freezing preparations for addition to the water in radiators are now added the newcomers Smith's "Bluecol" and the County Chemical Company's "Stop-it-freezing." Each of the above-mentioned firms issues a chart showing the quantity to be added to the radiators of all the principal makes of cars. At the Schrader Company's stand there is shown a little device that should appeal to doctors who have to look after their own cars. All motorists know what a nuisance it is, to test the air pressure of or inflate the tyres, to have to remove the valve caps, two for each tyre. To obviate this time-occupying task the firm mentioned has introduced a device known as the "Dublchek" cap," which fits in place of the usual large and small valve caps. While so constructed as to be unaffected by dust or water, the device enables the pressure to be tested or the tyres inflated by direct application of the tester or pump. The lighting and starting battery is probably the most frequent cause of doctors' motoring troubles, especially in the winter months when engines are more difficult to start, causing a greater drain on the accumulator's charge than can be replaced in ordinary running. To overcome this difficulty the Westinghouse Brake Company has introduced a device known as the "Westric" battery charger, which can be readily fixed in any private garage in which a supply of electricity is available. The only addition to the car, usually to the instrument board, is a special socket supplied with the charger. With the "Westric" all that is necessary to keep the battery in a state of charge is to connect up the lead from the charger to the socket on the car when the latter is put away for the night, and then to switch on the current. Finally, mention may be made

of a simple yet very useful accessory for medical men discovered on the stand of Smith and Sons, and consisting of a small memo pad with pencil, adapted to be clipped to the rim of the steering wheel of a car. Not large enough to interfere with steering, it can be used as a visual reminder of the calls a doctor may have to make on his rounds. The pad is chromium-plated, and so arranged that refills may readily be inserted.

C. J. W.

Scotland

Vital Statistics of Scotland for 1933

The seventy-ninth annual report of the Registrar-General for Scotland, dealing with the year 1933, includes a statistical summary by Dr. Peter L. McKinlay, Superintendent of Statistics. The principal features of the year under review were a birth rate which was the lowest on record, a marriage rate which was the highest recorded during the last ten years, a death rate below the average of recent years, and an infantile mortality rate which was the lowest recorded in this country with the exception of that for the year 1923. There was a great reduction in deaths from measles extending over the whole year, as against an increase in those from scarlet fever, particularly during the winter months. The death rates from bronchitis and pneumonia were below the average of the preceding five years. The mortality from tuberculosis showed a continued improvement, but there was a further increase in the deaths attributed to malignant disease. The estimated population of Scotland at the middle of 1933 was 4,912,000, comprising 2,364,000 males and 2,548,000 females. This represents an increase of 29,000 in the total population since the middle of 1932, and is attributed partly to excess of births over deaths and partly to inward balance of migration. The number of births registered during 1933 was 44,767 males and 41,779 females, a total of 86,546. The highest birth rate recorded was in the year 1876, when it was 35.62 per 1,000 of the population, and this rate has steadily tended downwards, with the exception of the war years, until, in 1933, it reached 17.62 per 1,000. With regard to deaths, the number registered during the year was 64,848, giving a rate of 13.2 per 1,000 of the population. This rate was 0.32 below that for 1932, and 0.45 below the average of the five preceding years. The death rate is now almost one-half of that recorded half a century ago. It shows a direct relation with urbanization, for when the rates are adjusted for differences of age and sex constitution of the population, the large burghs show a rate of 14.21, as compared with 12.7 in the small burghs and 11.86 per 1,000 in the landward areas. In the counties, inclusive of burghs, the highest adjusted death rate was in Lanark with 14.6, and the lowest in Peebles with 9.8. In the large burghs the highest was in Greenock with 16.1, and the lowest in Arbroath with 11.9. In small burghs it ranged from 15.5 in Kilwinning down to 10.7 in Peebles, and in landward districts from 13.3 in Lanark and in Stirling to 9.1 in Peebles. There were five centenarians whose age was verified, all being females. Since the practice was introduced in 1910 of verifying the ages of reputed centenarians 171 instances have been verified out of 331 reported. The principal epidemic diseases were responsible for 4,072 deaths, as compared with 4,235 in 1932, and of these 2,027 were due to influenza, 762 to whooping-cough, 356 to diphtheria, 310 to scarlet fever, and 219 to cerebro-spinal meningitis. Measles, however, was responsible for only thirty-six deaths during the year, or 856 fewer than in the preceding year. Tuberculosis continued to show a reduction, the total deaths from this cause being 3,910, which was the lowest number yet recorded, and the rate 80 per 100,000. This was in marked contrast to the rate of 382 per 100,000 which prevailed in 1870. Diabetes was responsible for 711 deaths, an increase of 45 as compared with the figure for 1932, and these deaths included 246 males and 465 females. There were 7,520 deaths from malignant disease, giving a rate of 153 per 100,000 of the population, and accounting for 11.6 per cent. of all deaths. These deaths numbered sixty-two more than in the preceding year, but the rate was the same. From other general diseases deaths were as follows: pernicious anaemia, 312; rheumatic fever, 171; chronic forms of rheumatism, 135; diseases of the nervous system, 8,983, of which 6,641 were due to various forms of apoplexy; general paralysis, 122; locomotor ataxia, 69; diseases of the circulatory system, 11,887—or 781 more than in the previous year—of which 10,489 were attributable to heart disease; of the respiratory system (excluding influenza and tuberculosis), 8,763—1,053 fewer than in 1932—of which 7,891 were due to bronchitis and pneumonia; of the digestive system, 3,771 (excluding malignant disease), of which 573 were attributed to gastric and duodenal ulcer; of the genito-urinary system, 2,629, of which 1,908 were due to diseases of the kidney; of pregnancy and childbirth collectively 512, or sixty-four fewer than in the previous year; puerperal sepsis, 212, or thirty-one fewer than in 1932. Deaths due kidney; of pregnancy and childbirth collectively 512, an increase of fourteen on the figure for the previous year, but a decrease of 85 as compared with 747 in 1930. The most important causes of death were: heart disease, malignant tumours, apoplexy, and pneumonia; and of these the first three showed increases as compared with the statistics for 1932. Among infants the most important causes of death were congenital defects, pneumonia, diarrhoea, whooping-cough, and convulsions. With regard to vaccination it is pointed out that before the passing of the Vaccination (Scotland) Act, 1907, by which conscientious objection became a valid reason for avoiding it, over 91 per cent. of the children were successfully vaccinated. Thereafter the numbers declined, except that in the year 1920, when there was an outbreak of small-pox in Glasgow, the rate rose to 71 per cent., but following this there was a steady decline, reaching in the year under review the lowest record of 49 per cent.

Psychiatry in Edinburgh

The annual report for 1933 of the Royal Edinburgh Hospital, Morningside, is the one hundred and twenty-first of this institution, and the first to be issued by Professor D. K. Henderson as physician-superintendent. His survey indicates that preventive and remedial measures have replaced the old-time custodial outlook, and he gives ample evidence for his statement that certification itself merely ensures continued treatment, whereby the patient is afforded a better chance of recovery than if he were ordering his own destiny. The large number of patients utilizing the out-patient departments, the nursing homes, the Jordanburn Hospital, and applying voluntarily for treatment in West House or Craig House, proves that the treatment of certain forms of nervous and mental disease can be conducted well on a co-operative basis. The psychological clinic under the direction of Professor Drever was established to study behaviour disorders in children, and to give advice regarding educational and vocational guidance. It is more specialized than the other departments, but its purpose of dealing essentially with children during the formative years of their development is of great importance. The clinics at the Royal Infirmary and the Jordanburn Hospital deal with the more medical aspects of psychiatry, whether applied to children or adults. Professor Henderson remarks that the association with the Royal Infirmary is particularly valuable, since it estab-

lishes a relation between psychiatry and general medicine which needs to be more firmly cemented. He considers that the chief benefit of out-patient departments for nervous and mental patients is the opportunity of seeing cases in their incipiency, without the patients having to incur the stigma of attending a mental hospital. The out-patient departments, he adds, have familiarized medical practitioners and the public with the fact that many forms of nervous and mental disease are remediable, provided proper treatment is applied at the right time. Such departments are thus valuable outposts in the department of mental health, and safeguard the patient from contracting more flagrant and serious disorders. If more prolonged, continuous, or intensive therapy is required, this is available at the Jordanburn Hospital, or at one of the associated nursing homes, without the utilization of legal formalities. Illustrative cases are recorded in the report, showing how conditions of various aetiology can now be selected for appropriate treatment. With these preventive agencies is combined the treatment of more advanced and less hopeful cases, and occupational therapy is singled out as a method which has proved very valuable. Heredity is no longer regarded from a fatalistic viewpoint, but rather as something which can be modified and helped. Professor Henderson regrets that the medical profession and the public are still too complaisant regarding the huge social, economic, family, and racial burden which mental illness and defect entail. He condemns the German policy of sterilizing the socially inefficient as too drastic, of doubtful practicability, and much too far in advance of public opinion and scientific knowledge. Sterilization in certain individual cases can be used as a therapeutic rather than as a eugenic measure, but it is still too early to adopt it as a uniform procedure for groups of cases which may differ widely in causation. He considers deep psycho-analytic therapy of use in certain specialized cases, but in others the more tolerant elastic methods of a more eclectic school seem to him to offer greater possibilities. There are many obscure biochemical, toxic, and histopathological problems which require investigation and may shed more light in time on the cure of mental illness.

Glasgow Post-Graduate Courses

The winter session of the Glasgow Post-Graduate Medical Association opens next month. Special lectures will be given at the Royal Faculty of Physicians and Surgeons' Hall dealing with practical problems of medicine in the light of recent observations and research. The series of lectures starts on November 27th, when Dr. John M. Cowan will discuss the prognosis of chronic heart disease. They will be open free to all medical practitioners. A series of weekly demonstrations for practitioners on Wednesday afternoons will commence at the Royal Infirmary on November 7th, when Professor A. W. Harrington will deal with coronary thrombosis. The demonstrations, which will cover a wide range of subjects, have been arranged on similar lines to those of previous years. The fee for the course is three guineas. Courses have also been arranged at the Glasgow Eye Infirmary for those interested in ophthalmology, and facilities for the study of clinical obstetrics and ante-natal work are offered by the Royal Maternity and Women's Hospital. The staff of the Ear, Nose, and Throat Hospital has arranged demonstrations on ear, nose, and throat affections, and a course in radium therapy is offered at the Radium Institute of the Glasgow Royal Cancer Hospital. A limited number of clinical assistantships are available at most of the institutions taking part in the work of the Association during the winter months as well as at other times of the year. Full particulars can be obtained from the secretary, Post-Graduate Medical Association, the University, Glasgow.

England and Wales

Maternal Mortality: A Call to Action

The Minister of Health has reviewed the action taken throughout the country in response to the memorandum on maternal mortality, issued in December, 1930, and has now sent a circular (No. 1433) to maternity and child welfare authorities commenting on the results so far observed. He finds that the number of ante-natal clinics has increased from 1,048 in 1930 to 1,340 at the end of 1933; the proportion of expectant mothers availing themselves of the services thus afforded has increased from 27.3 to 42.2 per cent., and maternity beds provided or subsidized by local authorities rose in number from 7,070 to 7,245. A satisfactory feature of this service, he adds, has been the tendency in some areas to concentrate the maternity work at the institutions transferred to county and county borough councils under the Local Government Act of 1929, by modernizing the maternity wards and their equipment, and by strengthening the medical and nursing staff employed for this work. It was originally recommended that new maternity accommodation should, where practicable, be associated with general hospitals, and recent experience has shown that it is in general undesirable to provide small maternity homes as separate units. The Minister thinks that greater use might still be made by local authorities of their power to assist expectant and nursing mothers by the supply of milk.

In spite of what has been done to improve and develop the maternity services the maternal rate has not begun to fall; it has, indeed, shown a slight tendency to rise. There are still many areas in which the maternity service is neither complete nor satisfactory, and there are few in which there is not scope for further improvement. In all areas there is probably need of more intensive efforts to educate women as to the importance of ante-natal supervision, and to make use of the facilities provided for this purpose. The Minister therefore urges local authorities to review their position in the light of the suggestions contained in the memorandum, and to take such further steps as may be necessary to complete their organization and ensure its effective working. In particular, he commends this to areas in which the maternal mortality rate is persistently high, and in which further efforts should be made to reduce the avoidable risks of child-bearing. He suggests that it would be desirable in all such areas for the local authority to call for a special report on this subject from its medical officer of health, showing what has been done as regards: (1) improving the ante-natal service; (2) ensuring that the services of a trained midwife are available for all confinements; (3) securing the provision of maternity beds for complicated cases and for patients with unsuitable home conditions, such beds to be associated where practicable with general hospitals, preferably in small units readily supervised, and for which prompt specialist services for serious cases may be made available; (4) providing facilities for the adequate isolation and separate nursing of cases of puerperal sepsis; and (5) obtaining the services of a consultant for doctors needing assistance in difficult or complicated cases. In order to encourage a more intensive study of the problem in such areas the Minister proposes to instruct suitable medical officers to make special visits to them in the near future. He hopes, therefore, that the authorities concerned will call for the preparation of special local reports at once and inform him when they are available. Arrangements will then be made for the official visits, and it is hoped that therefrom may spring a plan of action which will assist the local authority in performing its duty effectively. The Minister concludes by reiterating the view that there is a clear case for development of the maternity

services on urgent grounds of health, and offering to place the services of his Department at the disposal of those authorities which could thereby be enabled to improve conditions in their own areas.

A Nutritional Investigation of School Children

In view of a statement by the head teacher of one of the schools in Middleton, that "lack of nourishing food" was the cause in the children of an inability to concentrate, a deterioration in physique, a lowered standard of work, and an absence of vitality and pluck, an investigation of 217 unselected children in various departments of that school was arranged by Dr. S. T. Beggs, medical officer of health. Weights and heights were correlated, and shown to be average on the whole, although there were several individual exceptions. Most of the children had too little sleep, however, and the foodstuffs they received were sometimes most unsuitable. The school conditions were not altogether satisfactory, there being too much noise from adjoining classes—an important factor in feebleness of concentration. This investigation led to an inquiry being made in other schools, a questionary being sent to head teachers. The number of children found to be under the average height and weight amounted to 34.45 per cent. The percentage of children not receiving properly prepared meals at home was 8.61, having no milk 11.26, and having an excessive amount of tea 12.58. In 62.26 per cent. there was insufficient sleep. Overcrowding was found in 31.79 per cent., unemployment was possibly concerned in 49.67 per cent., and various physical defects were present above the average. Suitable instructions were accordingly issued to parents. The average of thirty-two estimates by clinic mothers of the cost of an economy diet weekly for a family of mother, father, and one child aged 5 was 16s. 8½d., as against the British Medical Association's figure of 13s. 8d. Current food prices were shown to be higher than those noted by the B.M.A. It is concluded that the causation of ill nutrition in growing children is complex in nature, but that sufficiency of sleep is a major factor in determining the growth and development of the school child. The excessive physical defects are to be related to the nutritional state. Home management in in a number of cases requires drastic correction, but the school environment also needs improving sometimes. The amount of money expended on food in the homes of necessitous cases is below the minimum for the satisfactory growth and health of the children. The mothers' estimates as regards the food requirements of a family closely approximate the B.M.A. figure, but the local prices of foodstuffs are higher than those estimated by the B.M.A. in the proportion of 24s. to 20s.

Central Midwives Board

At the October meeting of the Central Midwives Board for England and Wales the business dealt with included a letter from the Ministry of Health, enclosing correspondence relating to the action of an approved teacher who had signed wrong dates on the certificate of a candidate for examination. It appeared that the teacher admitted the error, but stated that when she signed the schedule she was seriously ill and did not confirm the dates. The Board decided to instruct the appropriate subcommittee to consider the question of removal of the name of the teacher in question from the list, and that she be invited to attend to show cause why her name should not be so removed; and that pending the hearing of the case by the subcommittee the teacher be instructed not to engage any further pupils. A letter was read from Dr. Chisholm of the Jessop Hospital, Sheffield, asking that, owing to the difficulty of obtaining a sufficient number of district cases for training the pupils of the hospital in accordance with the Board's rules, those pupils who were general trained nurses might be permitted to take less than the prescribed number of district cases and make up the required number of twenty by taking additional intern cases. The Board replied that it could not modify the rule in the way suggested, because the grant of its certificate to a woman entitles her to practise as a midwife, and before such a certificate is granted the Board must be satisfied, as far as it can be, that the recipient is fitted to practise as a midwife. The resolution added that a possible way of remedying the shortage of district cases at present available for the pupils in training at Sheffield would be to submit to the Board for approval as teachers the names of competent midwives in the Sheffield area who could, if approved, undertake district training. The Board recorded its deep sympathy with the relatives of the late Dr. W. W. King and the late Dr. Tenison Collins, and its appreciation of the valuable services rendered by them as examiners.

Treloar Hospital, Alton

A new policy has come into being at the Lord Mayor Treloar Cripples' Hospital and College at Alton. It was decided some time back to enlarge the scope of the work, and to consider any crippled child, using the word in its widest sense, eligible for admission. In his report for the twelve months ended March 31st, 1934, Sir Henry Gauvain remarks that this policy has now fully justified itself, and has given children who would not ordinarily be admitted for a long enough period into a specialized hospital a chance of receiving efficient and sufficient treatment. Among the 162 non-tuberculous cases dealt with during the year were two cases of arachnodactyly, a congenital condition in which the long, thin hands and feet are like those of the spider monkey in appearance, and there is imperfect muscular development, with abnormal movements at many joints. Owing to the weakness of the muscles the spine cannot be held erect, and becomes markedly curved, while the sternum is carinate, and the thorax narrow laterally. When the head is lifted the back straightens out, and therefore, if efficient treatment is given, the deformity is corrigible. One child who was unable to lift herself from the recumbent position when admitted can now stand erect, and with the aid of suitable appliances made in the hospital splint shop can walk a little. Another patient had hyperteleorism characterized by curious facial abnormalities, and was unable to walk; when discharged there was complete unassisted walking power. Various rare myopathies were also admitted, including five cases of progressive muscular dystrophy, three being of the pseudo-hypertrophic type. Two unusual complications after scarlet fever were observed, one being a rheumatoid arthritis and spondylitis, the other a case of hemiplegia, which occurred four weeks after the rash. Treatment has consisted of the usual orthopaedic operations and appliances, massage, and remedial exercises. Four patients with rheumatoid arthritis received injections of gold salts, and glycerin treatment was given in some cases of muscular dystrophy. A new type of splinting has been evolved in the late treatment of tuberculous disease of one or both hips where there is a tendency to adduction of the leg. This adduction deformity, which so often arises when hip disease has healed but fibrous ankylosis remains, has been hitherto one of the most trying, disappointing, and unsightly sequels. It frequently leads to severe disability, and sometimes to secondary spinal deformity. The splint comprises a padded band of sheet iron encircling the pelvis; on the sound side three duralumin

struts attached to this and supporting a concave chest-piece, fitted to the thoracic convexity when the patient is in the erect attitude ; and on the affected side a similar chest-piece attached to a duralumin bar, which is pivoted to the pelvic band behind the hip-joint, and twisting round the buttock proceeds down the inner side of the thigh, being attached to a metal plaque on the inner condyle of the femur, and strapped round the limb above the knee-joint. When the chest-piece on the affected side is drawn towards the chest-piece on the sound side, the leg on the affected side is abducted, and must remain abducted. In tuberculous disease of both hips the splint made on the scissors principle is equally effective ; adduction of the legs is impossible, and the so-called scissor-leg deformity cannot develop. The new wards of the hospital were finished and opened for use during the year ; there is now also a winter playground for ambulant children, providing complete shelter, flooded with radiant heat and ultra-violet light, and open to the air along the whole front. In the branch at Hayling Island a bathing pool has been constructed, 53 ft. long and 20 ft. wide, with a gently sloping floor, and ranging in depth from 6 in. to 4 ft. Filled with fresh sea-water each day, it has the advantage over the open sea of safety, ready accessibility, independence of tidal and weather conditions, and permitting the patients to have balneotherapy at the time of day most suitable for them.

London Medical Exhibition

The large hall of the Royal Horticultural Society at Westminster was occupied during the first five days of this week by the London Medical Exhibition, which brought together about 160 stands, representing the products of almost as many firms. The great bulk of the exhibits fell into the categories of pharmacy and foods, but surgical instrument makers were represented, as were the manufacturers of *x*-ray and artificial sunlight apparatus, optical and aural appliances, and orthopaedic constructions. Amid the crowd of more commercialized products the eye turned gratefully towards a few choice bookstalls, on which were displayed the wares of medical publishers ; and, after all, books are as necessary to the doctor's efficient practice of his profession as any of the other commodities. Three British spas—Bath, Buxton, and Harrogate—set forth their advantages. While it cannot be said that anything revolutionary made its appearance, there was at every turn material to appeal to the intelligence, and, incidentally, to charm the eye, for the manufacturers who serve the medical profession understand as well as any the psychology of the outside of the cup and platter. It would be invidious to mention the names of any exhibitors, but out of a hundred substances, preparations, or instruments, which, it was stated, had all been produced during the past year, a note may be made of a few. They included a chocolate-flavoured preparation of ferrous phosphate in granular form ; a vitamin A concentrate in moulded chocolate tablets ; other tablets each containing 5 mg. of pure crystalline vitamin C ; a sterile, stable solution of the acetyl ester of choline ; a bee venom for rheumatism, combined in a fatty base and employed as a salve ; sugar-coated granules of the active principles of calf's liver ; an adhesive plaster, spread on a suntan-coloured cloth, impervious to water or acids ; a portable electrocardiograph, incorporating a cathode-ray oscillograph ; a metal folding shield for placing over the patient's face in mastoid operations ; a stethoscope chest-end with flexible rubber resonator to which a detachable metal diaphragm is fitted ; an electric bone conduction aid for the deaf ; a spirit-proof thermometer case, with spring shock absorber, toughened glass lining, and pocket clip ; and finally, an enamelled case containing 117 dressings of different types for the surgery.

Ireland

Milk Regulations in Northern Ireland

Creameries will be required to furnish monthly returns to the Minister of Agriculture, setting out the quantities of milk received and from whom. Strict rules are laid down as to the surveillance of herds by producers, and officials will be empowered to inspect premises, equipment, and herds, and even to have milking tests carried out in their presence. The regulations dealing with the equalization payments from the Milk Fund in respect of all milk produced in Northern Ireland, delivered to a creamery, and used for the purpose of the extraction of cream or for manufacture into butter, provide that such payment in any month shall be made by the Ministry of Agriculture as soon as possible after the average price paid by all creameries for milk so used during the month has been ascertained. The Act provides that the equalization payment shall be a sum which will raise the average price of creamery milk to 5d. per gallon in the summer and 6d. per gallon in the winter. Concerning Grade A, Grade B, and Grade C milk—that is, milk to be sold for human consumption—the regulations provide that holders of producers' licences may not produce Grade D milk upon the premises in respect of which a producer's licence for Grade A, B, or C milk has been granted. The Ministry will not, save in exceptional circumstances and subject to such special conditions as it may impose, grant a Grade A producer's licence to any person in respect of any premises if that person holds a licence for the production and sale of Grade B and C milk on those premises. There is a similar proviso against granting a Grade B licence for premises in respect of which a Grade A or C licence is held, and against granting a Grade C licence for premises for which a Grade A or B licence is held.

National Maternity Hospital, Dublin

At the recent annual meeting of the governors of the National Maternity Hospital, Dublin, Dr. Myles Keogh, acting as chairman for the Lord Mayor of the city, stated that four years ago the governors were warned that the old hospital buildings were rapidly deteriorating, and they were advised to look for a site for a new building. As a result of the efforts of some of the governors about £6,000 was raised, and the adjoining houses between the present hospital and Merrion Square were bought up. With the money received from the first sweepstakes, work on a new wing on the site of the Merrion Square houses was begun, and this was now approaching completion. For the past three months there had not been an unoccupied bed in the existing hospital. In 1930 the total number of patients treated was 9,560 ; so far this year the total had been 10,076. In the medical report, which was read by Dr. Coffey, assistant master, it was stated that during the past year 1,745 patients were admitted, including 368 to the gynaecological department. In the out-patient department 7,503 women and infants attended and received treatment.

Medical Inspection of School Children

Dr. R. I. G. Reid, medical inspector of schools in the County Armagh, in his report for 1933, states that while the treatment of enlarged and diseased tonsils and adenoids is carried cut by the Armagh, Lurgan, and Newry hospitals a considerable portion of these cases continue to be neglected. No provision has been made for the treatment of the other defects found during the course of medical inspection, apart from the assistance given to indigent parents towards the purchase of spectacles and the dressing by the school nurse of any sores or wounds met with actually in the course of a visit. The school medical officer, with the co-operation

of the county infirmary authorities, has, however, started a small dispensary on Saturday mornings at the Infirmary. During the year fifty-five cases of chronic ear discharge were seen—a higher number than in the previous year, due probably to a larger incidence of respiratory affections during the winter and spring. Among skin diseases scabies has decreased, while ringworm, of which there were previously so few cases that the condition was not separately classified, has increased. Impetigo contagiosa has also increased, and has been particularly prevalent in the Armagh City schools. The number of eye affections remains much the same as last year, with, however, a curious increase, for which there is no obvious explanation, in the number of cases of squint and a marked increase in those of corneal opacity. The increase in goitre, in which category are included all classes of thyroid enlargement, may be largely attributed to the dry weather of last summer, which had an adverse effect on the water supplies of most rural areas; the condition has been found most prevalent in the country districts. The number of cases of speech defects is about the same as before. The total number of children on the roll was 13,928; number examined, 11,881; scabies, four; ringworm, twenty; impetigo, sixty; other skin diseases, thirty; blepharitis, eighteen; conjunctivitis, twenty-two; corneal opacity, thirty; other eye conditions, fifty-five; serious defects of vision, 807; squint, 232; defective hearing, forty-six; otorrhoea, fifty-five; tonsils requiring removal, 396; adenoids requiring removal, 272; goitre, 136; defective, sixty-one; defective teeth, 8,839; heart disease, fifty-three; anaemia, 132; mental deficiency, eight.

Midwifery Nurses and General Nursing

The committee of the Irish Nurses' Union has written to the medical associations in the Free State calling their attention to, and asking assistance in, preventing, as far as possible, the growing practice of midwifery nurses undertaking general nursing without the necessary qualifications and training. The Department of Local Government and Public Health is strongly opposed to the employment of midwifery nurses for general nursing; there is too frequently the possibility that these nurses may attend patients suffering from infectious and contagious diseases, and thus expose maternity patients to considerable danger. The whole question is likely to come before the General Nursing Council and Central Midwives Board; meanwhile medical practitioners would be acting in their own interests if they refused to recognize midwifery nurses for other than maternity work.

The quarterly court of the directors of the Society for Relief of Widows and Orphans of Medical Men was held on October 10th, when the deaths of two members were reported and one new member was elected. Special grants amounting to £87 10s. were voted to orphans to enable them to continue their education; and £665 was voted as a Christmas present to the widows and orphans in receipt of grants, each widow over 75 years of age to receive £15, those under 75, £10, and each orphan £10. Two widows of members will shortly be coming on the funds and will receive a yearly grant of £60. The chairman of the Propaganda Committee reported that efforts were still being made to persuade newly qualified medical men to join the society. The great advantages of membership were illustrated by the case of the widow of a member whose death was reported. She came on the funds in 1919 and died in June last. Her late husband had paid in subscriptions £31 10s., and the widow received £1,170 in grants from the society. Relief is only given to the widows and orphans of deceased members. Membership is open to any medical man who, at the time of his election, is resident within a twenty-mile radius of Charing Cross. Full information may be obtained on application to the secretary, 11, Chandos Street, Cavendish Square, W.1.

Reports of Societies

CONTROL OF THE BLOOD PRESSURE

In the Section of Therapeutics and Pharmacology of the Royal Society of Medicine on October 10th, the president, Professor J. H. Burn, M.D., devoted his address from the chair to the subject of "The Control of Blood Pressure."

Professor Burn said that present conceptions of the control of the general blood pressure were based on the view that the sympathetic nerves were only constrictor in action, and the circulating hormones, adrenaline and vasopressin, only pressor in effect. Surgical treatment of high blood pressure and allied conditions, which was increasing, had been directed accordingly to the removal of portions of the sympathetic system and of the suprarenal glands, or tumours connected with them. Some success had, in fact, been achieved in two directions. Jonnescu and Bruning had found that attacks of angina pectoris disappeared in patients from whom the left sympathetic chain (from below the superior cervical ganglion down to and including the inferior cervical or stellate ganglion) had been removed; and again various observers, following C. H. Mayo, had found that the crises of paroxysmal hypertension disappeared after removal of a chromaffin tumour from the neighbourhood of the suprarenal gland. It seemed quite clear that paroxysmal hypertension must be due to the sudden liberation of adrenaline in the blood. Apart from these two directions, however, surgical treatment had not been successful. Attempts had been made to treat continuous hypertension by removal of the suprarenal gland and by removal of portions of the sympathetic system, and both these methods seemed to have failed. The attempts had not stopped at removal of the second, third, and fourth lumbar sympathetic ganglia with adjacent branches on both sides, but had recently been extended by Adson and Brown to include bilateral section of the anterior roots of the spinal cord from the sixth thoracic to the second lumbar. Some lowering of the blood pressure appeared to have resulted from paralysis of the abdominal muscles.

Variation in Normal Pressure

It was time, in Professor Burn's opinion, to reconsider the theoretical basis of such attempts. He showed graphs and gave a close description of the examination by Alvarez of 6,000 university students and graduates, from 16 to 40 years of age, with a view to determining the variation in normal blood pressure. The systolic blood pressure was found to range from 85 mm. to 190 mm., and if particular age groups were taken the variation was as extensive in such groups as in the men taken as a whole. Thus, among about 1,200 men of 18 years the blood pressure was found to vary from 85 mm. to 180 mm. When frequency distributions of these blood pressures were plotted it was evident that these were approximately normal, and that blood pressure showed continuous variation, just like body height. The average height of men was about 5 ft. 6 in., but heights of 5 ft. on the one hand and of 6 ft. on the other were not considered pathological. On the other hand, there was a disposition to expect that the pulse rate of any person should be about 72 per minute when at rest, the fact being overlooked that this was only the average resting rate. Similarly, it was expected that the normal blood pressure should be about 125 mm., but actually pressures of 85 mm. or of 180 mm. might be quite normal. The standard deviation calculated from Alvarez's figures showed that 20 per cent. of men had a blood pressure greater than 140 mm., and from 2 to 3 per cent. a pressure greater than 160 mm. The observation of a high figure on one occasion was not sufficient to justify a diagnosis of hypertension unless it was known that at an earlier examination the blood pressure was much lower. If twenty-two healthy people were examined,

one of them, on the average, would have a pressure of either less than 103 or greater than 157 mm., and by the law of averages, again, one man in about every forty-four must have a pressure greater than 157 mm., but a pressure which for him was just as normal as the colour of his eyes. How many unfortunate people were going about under the impression that they were suffering from high blood pressure when in fact their pressure merely showed an unusual deviation from the mean! Did the disease of hypertension really exist, or was it a figment of the imagination? One might doubt whether a high blood pressure should be classified as a disease unless there was evidence that the pressure was continuing to rise.

Pressors and Depressors

Turning to the hormones and the nerves which were commonly regarded as vaso-constrictor in action—namely, the hormones adrenaline and vasopressin and the sympathetic nerve supply—Professor Burn said that as far back as 1900 adrenaline was shown to have a vaso-dilator as well as a vaso-constrictor action. In many conditions when the blood pressure was high the administration of adrenaline caused a fall. Probably this vaso-dilator component was present whenever adrenaline acted, and it should therefore be remembered that removal of the suprarenal glands, while taking away a pressor agent, was also taking away a depressor agent. Thus it was possible that the removal of the glands might be the worst treatment for patients with continuous hypertension. In the same way it had lately been shown that vasopressin exerted a depressor effect when injected into the ventricle of the brain. Harvey Cushing demonstrated that when vasopressin was so injected—certainly in large doses—there ensued, not the sickly pallor which followed intramuscular injection, but an intense flushing of the skin and sweating. The important fact emerged from Cushing's observations that when pituitary extract was injected in large doses—20 units—into the ventricle (which might be the normal means of entry) it caused vaso-dilatation and not vaso-constriction; from which it followed that pituitary extract, like adrenaline, might play a part normally in keeping the blood pressure low. Finally, it had been shown recently in the dog that the sympathetic supply to the muscles of the hind limbs contained a large vaso-dilator component. In the laboratory, indeed, it was much easier to observe the dilator than the constrictor effect. In this connexion he recalled Michell's observations at Cambridge that the blood pressure of rowing men was usually much less than the average. Hence all three mechanisms, hormonal and nervous, commonly thought of as pressor, might also be depressor, and it seemed more accurate to think of them as controlling the blood pressure by raising or lowering it than simply as factors which raised it. To remove suprarenal glands or portions of the sympathetic system might be a treatment calculated to worsen rather than to improve a patient's condition.

Vascular Action of Ether

As a kind of postscript to his address Professor Burn discussed some evidence concerning the vascular action of ether when used as an anaesthetic. Although ether was much weaker in this respect than chloroform, nevertheless it weakened the heart and lessened its output. Ether also caused vaso-constriction, and because of this the coronary flow was maintained. The vaso-constriction was caused by impulses passing down sympathetic nerves, for if the ganglia were first paralysed by nicotine to prevent the passage of such impulses, ether then caused a very large fall of blood pressure. Under ether anaesthesia the periphery must have a deficient blood supply, for a weakened heart pumping blood through constricted arteries could not maintain a normal circulation. If the peripheral circulation remained poor for very long it was clear that the patient must suffer. A recognition of the serious circulatory disturbances which ether might produce should encourage the use of some of the newer anaesthetics.

ADVANCES IN CARDIOLOGY

The opening meeting of the third session of the Mid-Staffordshire Medical Society was held at Stafford on October 2nd with Mr. F. M. Blumer in the chair.

Dr. Crighton Bramwell of Manchester, in an address on "Some Recent Advances in Cardiology," compared the teaching of cardiology to-day with that of twenty years ago. In the province of pathology important advances had been made in our knowledge of angina pectoris. It was now generally agreed that an insufficient supply of oxygen to the heart muscle was the causal factor in this condition. The pain of myocardial infarction was so similar to that of angina of effort that there could be no doubt that both were due to the same cause. Coronary occlusion was no longer regarded as a necessarily fatal lesion, and could often be diagnosed during life. It differed from angina of effort in many respects, but the most important diagnostic features were the persistence of the pain, the signs of shock, and the electrocardiographic findings. Neuro-circulatory asthenia had attracted much attention during the war, but also occurred in civil life as the result of acute infections and focal sepsis. It should be treated by graduated exercise and not by rest. Thyrotoxicosis was a common cause of auricular fibrillation, and in some cases this type of arrhythmia was the sole manifestation of the condition. Electrocardiography had come to stay. It often afforded objective evidence of degenerative or inflammatory lesions of the myocardium in cases where the ordinary methods of physical examination proved negative. It was especially helpful in patients with coronary arterial disease. A normal electrocardiogram did not signify a normal heart, and the electrocardiographic findings must always be considered in conjunction with the clinical evidence. Radiography was now being extensively employed in the diagnosis of cardiac lesions. A radiogram could provide all the information obtained from percussion, and could do so with a much greater degree of accuracy. It provided information as to which chambers of the heart were enlarged, and thereby provided a clue to the cause of the enlargement. It made possible an inspection of the thoracic aorta throughout its whole course, and the recognition not only of dilatation but also of calcification and atheromatous changes. It revealed dilatation of the pulmonary artery and its branches which could not be detected in any other way.

In the province of therapeutics the standardization of digitalis by biological assay had paved the way to the massive dose method of oral administration. Digitalis had almost entirely replaced strophanthus, and was more useful than quinidine in most cases of auricular fibrillation. Iodine therapy in Graves's disease had greatly reduced the operative mortality, and as a life-saving measure in acute cases was comparable to insulin in diabetic coma. Salyrgan given intravenously had established a well-merited reputation in the treatment of heart failure, and would generally produce a copious diuresis in patients with oedema. The continuous treatment of angina pectoris by nitrites had been discredited, though the drugs were useful when given at such times as an attack was likely to occur. The closed mask and nasal catheter methods for the administration of oxygen marked a striking advance over the old open method, but could only be expected to relieve dyspnoea, which depended on deficient oxygenation of the blood in the lungs. Complete thyroidectomy was now being practised with a view to reducing the metabolic rate in patients with advanced heart failure, but the value of sympathectomy and other surgical procedures for the treatment of angina pectoris was still *sub judice*.

In conclusion, Dr. Crighton Bramwell reviewed the general outlook on cardiology at the present time. Aetiology was now regarded as the most important consideration in the diagnosis of a cardiac case. Most patients with symptoms suggestive of heart disease could be classified in three groups: those with structural lesions, those with some toxic affection of the myocardium, and those who were suffering from an anxiety neurosis. All three factors might, however, be present in some cases.

CORRESPONDENCE

L'Union Internationale Contre le Cancer

Sir,—Many of your readers will be aware that a preparatory conference took place in Paris last March which had for its purpose the formation of an international union, whose main objects will be to establish close liaison between organizations concerned in the study of cancer; to combat charlatanism; to propose criteria for a uniform international system of international records; to publish occasional bulletins on matters of international importance; and to organize future international congresses.

The preparatory conference, which was convened by Monsieur Justin Godart, former Minister of Health, and President d'Honneur of the last International Cancer Congress in Madrid in 1933, was extremely well attended. No fewer than thirty-two countries (twenty European and twelve extra-European) were represented by one or more delegates. The British delegation consisted of Colonel Smallman from the Ministry of Health; Mr. Richard Davis from the British Empire Cancer Campaign; Dr. Cramer from the Imperial Cancer Research Fund; Mr. Sampson Handley from the Middlesex Hospital; and Mr. Cecil Rowntree from the Cancer Hospital.

Agreement was reached upon certain general questions of principle, and statutes controlling the organization of the union were adopted. Of these, the ones relevant to the present purpose are:

1. That each country shall be represented by two delegates, who will collectively constitute the governing body (Le Conseil de Direction), which will meet annually, so far as possible in a different country each time.

2. That the Conseil de Direction shall have power to add to its numbers up to one-third of its total membership, by election of associate members from any country.

3. That each country shall be asked to arrange for the nomination of these national delegates.

A temporary executive committee was appointed, consisting of:

France	M. Justin Godart (President).
Germany	Professor Borst.
Belgium	Professor Maisin.
Italy	Professor Lustig.
Spain	Professor del Rio Hortega.
United States	Dr. Carter Wood.
Great Britain	Mr. Cecil Rowntree

They are to conduct any necessary business until such time as the Conseil de Direction is in being. This temporary committee met in Paris in July, and provisionally arranged that the annual subscription of Governments or cancer organizations desiring to join the Union Internationale shall be one thousand French francs.

Arrangements have been made for the preliminary work in connexion with the selection of British representatives for the Conseil de Direction to be undertaken by the British delegates to the preparatory conference held last March, and the object of this letter is to ask those organizations in Great Britain which were not represented at the preparatory conference, but which will, no doubt, desire to join the Union, to communicate with me, or with one of my fellow delegates, so that a meeting may be called for the purpose of electing the two British representatives.

I should add that the Ministry of Health and the Department of Health for Scotland are sympathetic towards the objects of the proposed Union.—I am, etc.,

9, Upper Brook Street, W.1, Oct. 15th. CECIL ROWNTREE.

Whither General Practice?

Sir,—Might I be granted the privilege of ventilating a grievance in your columns, in order to obtain the opinions of the large body of general practitioners whom it intimately concerns?

There is to-day an increasing tendency for ante-natal, welfare, and other auxiliary medical services to encroach on the functions of the doctor whose patients belong to the lower middle class. Two recent cases in my practice illustrate this, and are only typical, I believe, of thousands of others in all parts of the country.

Case 1.—I advised a patient, whose first confinement I attended and whose infant did not thrive on breast-feeding, to adopt "complementary feeds," and gave the necessary detailed instructions. A few days later, without my knowledge, a welfare worker called on the young mother and, in a most courteous and ingratiating manner, discussed the progress of the child, casting doubts on the accuracy of my instructions. After an interval of three days she repeated her visit, to inquire about the child, and remarked that, though she could not "interfere" while I was in attendance, she could give advice when I had "ceased to attend"! This, in effect, meant that the continuous individual supervision of the infant, which I look upon as one of the chief privileges and duties of the family doctor, was to be taken out of my hands and conducted by a welfare worker. The mother did not belong to any "clinic," nor had she expressed any wish to consult a welfare worker, being both anxious and able to pay for my services. When I complained to the medical officer of health of the district he not only justified the worker's action, but tacitly admitted that, under his instructions, members of his staff paid these uncalled-for visits to mothers when births had been notified to him.

Case 2.—A patient, whose confinement was conducted by a nurse, was strongly urged by a welfare worker to take her baby to the clinic. There the assistant medical officer of health, after examination, advised hospital, but the mother expressed the wish to consult her own doctor first. Since the patient was well able to afford a doctor the welfare worker was not, in my opinion, justified in urging a "clinic," nor the assistant medical officer of health a "hospital." For the benefit of such a patient both should have advised her to select a doctor if she had not already got one.

Having held an appointment of medical officer of health and, within the last two years, organized and directed a most successful welfare centre, I do not underrate the value of "clinics," but am convinced that an over-zealous staff is often too anxious to enrol, one might almost say "press-gang," members who are quite able to afford a private doctor. "General practice" becomes increasingly curtailed, largely because of the facilities given by hospitals and various clinics which, while complaining of "abuses," do not take the necessary steps to encourage, still less order, many of their patients to obtain the services of a family doctor. A great service would be rendered to the profession if any reader would suggest a remedy for this defective procedure, more especially where the authorities are opposed to any constructive action.—I am, etc.,

Bournemouth, Oct. 12th. W. SAVILE HENDERSON, M.D.

Muco-purulent Tubo-tympanic Infections

Sir,—Mr. Holt Diggle's letter in the *Journal* of October 6th encourages me to send you some remarks which I made in closing the discussion at Bournemouth, on the subject of muco-purulent tubo-tympanic infections. I suggested this subject to Dr. Rodger because I had been remarkably unsuccessful in dealing with patients suffering from this condition.

Nasal obstruction (including removal of adenoids) and nasal accessory sinusitis, if present, should, of course, be dealt with, but even after this has been done many cases

continue to discharge. It is not uncommon to find that while a central mass of adenoids has been successfully removed there still remain adhesions in Rosenmüller's fossae —a difficult condition to cure. Some patients only suffer from muco-purulent otorrhoea for a short time whenever they have a cold in the head, and these are, of course, not difficult to deal with. In some of the clinics abroad these cases of muco-purulent otitis media are regarded as tuberculous, but I am not sure whether the discharge is considered to be due to tuberculous disease of the lining membrane of the Eustachian tube or whether the patient is thought to be a tuberculous subject, and therefore unable to recover from the muco-purulent otorrhoea.

It seems to me that the trouble probably lies in air cells in connexion with the Eustachian tube. During recent years it has been recognized that there are not infrequently cells in the apex of the petrous temporal above the cochlea. In severe cases of acute purulent otitis media infection in these cells gives rise to the condition known as " apicitis," associated with severe pain behind the eye on the corresponding side and paralysis of the homolateral sixth nerve. It seems quite probable that chronic infection of these cells may be the cause of many cases of apparently incurable muco-purulent tubo-tympanic catarrh.

I have tried many methods in attempting to cure the condition—for example, the internal administration of sodium iodide in large doses, combined with the local use of peroxide of hydrogen (Pfannenstiel's method). In other cases " mucidan " in various dilutions was used in the form of ear drops, but the remedy is painful and not suitable for children. Nager of Zurich recommends intratympanic syringing, drying with cotton mops, and the insufflation of boric powder or " zeroform." The method I have most frequently employed is to syringe out the anterior part of the tympanum and the Eustachian tube from the external acoustic meatus by means of a metal syringe with a bulbous nozzle which tightly fits the external meatus. The patient sits holding a basin below his chin, and the fluid syringed into the meatus passes through the perforation, down the Eustachian tube, and drips from the corresponding side of the nose. Thereafter, the fistula bag is used, just as in cases in which one suspects erosion of the lateral semicircular canal (circumscribed labyrinthitis). After the tube has been dried out by the use of the fistula bag 10 per cent. argyrol is instilled into the meatus and forced down the Eustachian tube by further application of the fistula bag. In other words, one treats the condition somewhat like a case of gleet. Theoretically, this line of treatment would appear to be very satisfactory, but, unfortunately, although the discharge lessens or even ceases for a day or two, the trouble recurs.

May I, in conclusion, say that I regret that the discussions which followed the various papers at the Bournemouth meeting had to be reported in such an extremely abbreviated form. The discussion on July 26th, after Mr. Just's paper on " Allergic Factors in Rhinorrhoea," was one of the most interesting and informative that I have ever listened to.—I am, etc.,

Edinburgh, Oct. 10th. J. S. Fraser.

Pre-natal Diagnosis of Congenital Heart

Sir,—In the literature available to me I can find no reference to a diagnosis of congenital heart having been made before birth. My search has not been exhaustive by any means, but that there is such a possibility the following case will illustrate.

The mother, a primipara aged 27, presented herself for the first time at the ante-natal clinic on September 12th, 1934. The presentation was a vertex, and normal foetal heart sounds were heard in the usual right occipito-anterior position. The mother had a systolic murmur in the mitral area, which had been discovered previously—during a temporary illness some time before. She gave no history of rheumatism or any allied condition, and had never suffered any symptoms of heart disease. The murmur was regarded as a functional one.

From September 12th the patient was seen every month until the thirty-sixth week, and from that time weekly until labour. During this period the foetal heart was heard in the right occipito-anterior position at each visit, and no souffles or other deviation from the normal foetal heart sounds was heard at any time. On October 2nd, at what corresponded, according to the date of her expected confinement, to the thirty-ninth week, a murmur was heard in what is regarded as the right occipito-anterior position. This murmur was asynchronous with the mother's pulse, and presented a peculiar rough and somewhat prolonged crescendo sound. As I knew no way of timing a murmur in the foetal heart, and as its other characteristics were very similar, I recorded it as a presystolic murmur.

Labour commenced on October 4th, and was normal in every respect and unassisted, the second stage occupying only fifty minutes, and she was delivered of a live male child weighing 6 lb. 4 oz. The infant was cyanosed at birth, but showed no clubbing of the fingers or toes. A systolic murmur could be heard at the base, loudest in the pulmonary area. Considering that it had been heard through the mother's abdominal wall, it seemed that it had decreased in intensity. As the infant was cyanosed, in accordance with the usual practice at the Council's maternity home, where this child was born, Dr. D. M. Cunningham, the mother's private doctor, was called in to attend the child. He confirmed the diagnosis of congenital heart. The infant died on October 6th at 10.30 a.m.; unfortunately a post-mortem was not practicable. I am indebted to Dr. Cunningham for the privilege of examining the infant at the time it was under his care.

Although the case appears at first to be merely of clinical interest, I had hoped, if the infant had survived, to endeavour to watch the changes, if any, in the character of this murmur, with a view to learning, if possible, something of its relation to prognosis.—I am, etc.,

Erith, Oct. 10th. A. W. Johns, Medical Officer of Health.

Ether Convulsions

Sir,—Having had a case of ether convulsions a few days after the publication of Dr. Sykes's letter (September 29th, p. 610), I reread it with great interest, and think that perhaps a few details about my patient may be useful to those investigating this dangerous condition. In many respects it resembled Dr. Sykes's case.

The patient was a well-grown boy aged 14, sent in as an acute appendix. He was given morphine 1/12 grain on admission, and a further 1/12 grain with atropine 1/200 grain before operation. Induction, by a few drops of ethyl chloride with eau-de-Cologne, followed by ether and oxygen, was rather delayed, owing to the boy's intolerance of ether at first. I had to go slower than usual, as he tended to cough. The surgeon commented on his rapid respiration, and the boy phonated until he had definitely had more anaesthetic than the average for such a patient. Masses of tuberculous glands were found, and there was a strong suspicion of tuberculous enteritis also, but the operation, appendicectomy, was uneventful.

Just as the last sutures were being tied, the mask raised, and the ether turned off, twitching of the face began, exactly like a bad chorea. The colour throughout was bright pink.

As the condition did not spread to the limbs no further treatment was given, other than a supply of oxygen and attention to the airway. The head had been slightly raised the whole time to help relaxation. Twitching ceased after five or six minutes.

(1) In this case, and also in another which I had in May, 1933, the same oxygen cylinder was used for several other appendix cases without any convulsion. This seems to acquit the oxygen. (2) Both these cases were not

smooth from the start. Their respiration was uneven, they did not settle well, and caused me anxiety all the time, before anything happened. (3) Both had more ether than normal, and developed symptoms at the end of the operation—that is, just after absorbing "the little more," given for closure of the peritoneum. The amount of ether given was, to the boy of 14, four and a half ounces, and to the other case, a man of 31, nine ounces, both more than my average.

I would suggest that ether convulsions are due to the presence of more than one factor at the same time. I suggest that the unsatisfactory respiration is the danger signal that indicates the presence of one of the factors, and that when this occurs special care should be taken not to give any more anaesthetic than is absolutely required by the surgeon, as the excess of ether is also, I believe, often connected with the condition.—I am, etc.,

Doncaster, Oct. 12th. B. E. Cook.

Control of Haemorrhage in Prostatectomy

Sir,—I am much interested in Mr. F. McG. Loughnane's letter in your issue of October 13th. His findings bear out my theory as propounded in the description of my two-way catheter and vacuum-flask retainer (irrigator), published in your issue of July 15th, 1933. My article "Complete Closure of the Urinary Bladder in Cystotomy Cases," published in the *Lancet* of January 13th, 1934, describes the method fully. For the past year I have used my apparatus for continuous irrigation in acute and chronic cystitis, pre-operative treatment of bladder operations, and in selected cases for complete closure of the bladder in cystotomy cases. In all cases that have been treated in this way haemorrhage, when occurring, has been completely controlled in twenty-four to forty-eight hours.—I am, etc.,

London, W.1, Oct. 15th. Morton Whitby.

Female "Bleeders"

Sir,—I was interested in the cases reported by Drs. Foulis and Crawford in the *Journal* of September 29th (p. 594), and by Dr. Leak in the correspondence columns of October 13th. The authors of the first article do not seem to have been previously aware of the possibility of haemophilia occurring in the female. Dr. Leak mentions the possibility of haemophilia being a Mendelian characteristic, but is wrong in arguing that it is probably a dominant one because it happens to have occurred in consecutive generations.

The known recessive sex-limited factors in the human race, such as haemophilia and colour-blindness, are ordinarily confined to the male sex, but are transmitted through certain female members of the family. This is one of the reasons for believing that sex itself is a Mendelian characteristic, and that in the human species the male is the mixed dominant (DR) and the female the pure recessive (RR). Thus, if the normal constitution of male and female be DrRd and RdRd respectively (where r and d are factors concerned with haemophilia), the female carrying the factor for haemophilia, though not herself a bleeder, will be represented by RrRd. Mated with a normal male, the offspring might be DrRr, DrRd, RdRr, RdRd—in other words, one male bleeder, one normal male, one female carrier, and one normal female. The female carrier will produce male bleeders as before, but the male bleeder mated with a normal female (DrRr × RdRd) will produce normal males (DrRd), or female carriers (RrRd) only.

The rare cases in which female bleeders occur are accounted for only by the union of an affected male (DrRr) with a female carrier (RrRd), in which case the children will consist of one affected male (DrRr), one normal male (DrRd), one *affected female* (RrRr), and one female carrier (RrRd). In haemophilia this is particularly uncommon because of the rarity of a male living long enough to marry and have children. It will be noticed that both the family trees referred to can be explained by this simple application of Mendelism.—I am, etc.,

Sheffield, October 15th. Robert Platt, M.D., M.R.C.P.

Sir,—There have been two examples of familial bleeding recorded recently in the *Journal*, each of which shows several points of interest. The first, that of Dr. Foulis and Dr. Crawford (p. 594), claims the existence of two females suffering from haemophilia. The pedigree is characteristic of a Mendelian sex-linked defect, and may well be that of haemophilia, but it is interesting that two affected brothers should reach adult life and produce families. The authors state that "a haemophilic man rarely transmits the disease to his sons or the tendency to his daughters," but the reason for this is that the haemophilic man rarely reaches adult life. The existence of a haemophilic female can be satisfactorily explained if the father is haemophilic and at the same time the mother is a haemophilia carrier, and I suggest that the mother of the two affected females should be investigated from this point of view. The chance of this occurring must, of course, be extremely small. At the same time there have been many examples of female members of haemophilia families who, though not truly haemophilic, show an abnormal tendency to bleed.

The family recorded by Dr. Leak (p. 700) probably showed an entirely different defect. If all the affected members of this family are suffering from the same abnormality then the condition is certainly inherited as a Mendelian dominant. Dr. Leak states that all the affected members suffer from fairly frequent and prolonged epistaxis, and this feature alone makes it highly probable that the abnormality is hereditary telangiectasia. It sometimes happens in this disease that the lesions are scanty and not very obvious on the skin, but I suggest to Dr. Leak that he should examine the lips, tongue, buccal mucosa, nasal mucous membrane, and the conjunctivae for the presence of the characteristic small, bright red telangiectases.—I am, etc.,

Leeds, Oct. 15th. Hugh G. Garland.

Sir,—I was greatly interested in the cases quoted by Drs. M. A. Foulis and J. W. Crawford, and by Dr. W. N. Leak.

The haemorrhagic diseases are as yet the most unsatisfactory section of haematology, because our knowledge of several of the factors is incomplete. We do not know, for instance, the full mechanism of the coagulation of normal blood. In diseased states there are many anomalies which cannot be explained. One of the greatest difficulties is the inconstancy of the phenomena which may be associated with thrombocytopenia. For example, blood from which the platelets have been removed will not clot unless it is taken at the height of digestion, whereas the blood from a thrombocytopenic patient will sometimes clot normally when taken fasting. Further, even if the coagulation time and bleeding time are normal it cannot be stated that a patient will not bleed excessively when exposed to injury.

Cases of female "bleeders" are usually examples of haemorrhagic diathesis. The females of haemophilic families occasionally bleed somewhat readily, but never to the extent that the males do. According to Bulloch and Fildes, cases of haemophilia apparently transmitted by males are explained by the wife being of bleeder stock. I should like to suggest, therefore, that the genealogies

quoted by your contributors are examples of the rare hereditary haemorrhagic diathesis, sometimes called constitutional haemogenia or hereditary pseudo-haemophilia. The latter is a bad name, because the condition has nothing to do with haemophilia. As its name implies, it is a hereditary disease, transmitted directly from generation to generation, affecting females as well as males.

In my view there are four simple tests which should be performed in the diagnosis of these blood states: (1) a platelet count, (2) the coagulation time, (3) the bleeding time, (4) the capillary resistance test. In haemophilia the coagulation time is greatly prolonged, the other tests being normal. In haemorrhagic states the coagulation time shows no gross change, though the clot may not retract normally, while the other three tests give abnormal findings, chief of which is the low platelet count, which may be found especially at the time of the occurrence of the haemorrhage.—I am, etc.,

Brighton, Oct. 14th. L. Ivan M. Castleden.

Residual Infection of the Jaws

Sir,—The article on "Residual Infection of the Jaws" by Mr. R. S. Taylor (*Journal*, September 22nd, p. 553) recalls the fact that this condition was one of the problems that provoked Novitzky to devise his technique for removing teeth over twenty years ago in San Francisco. He was very frequently defeated and disappointed with his attempts to relieve patients' symptoms by the removal of infected teeth. These defeats and disappointments, he concluded, were due to the fact that infections still persisted in the jaws after tooth extraction by the ordinary pulling method, because the pathologic soft and hard tissues—the result of infected teeth and pyorrhoea—were not eliminated, and could not be eliminated, by the mere removal of the infected tooth. He then devised a new method of removing teeth. Suitable incisions were made, a flap of muco-periosteum was turned back, the outer plate of bone encasing the teeth was chiselled away, and then the teeth were removed. This gave visible and instrumental access to the region about the root ends, which then could be removed immediately and thoroughly by means of curettes or other instruments. The flap was restored to its former position and sutured in place.

Having employed this technique in my own practice for about eighteen years, I find that it accomplishes a great deal more than Novitzky anticipated. It accomplished more than any other technique devised for the elimination of infected teeth and for shaping a suitable bony base for artificial tooth plates to rest upon. It changed the status of those who employed it from that of "tooth pullers" and "tooth extractors" to that of surgeons. It is the technique employed in the Mayo Clinic by Gardner, in Chicago by Molt, and by the leading oral surgeons in the United States and Canada. When this technique is employed properly, under block anaesthesia with novocain, it eliminates all of those not infrequent catastrophes that follow the ordinary method of tooth pulling with a whiff of gas and oxygen.

Molt, in a paper on the elimination of oral foci of infection in the *British Journal of Dental Science* (1921, p. 179), states:

"Far from being infinitesimal [the percentage of edentulous areas showing radiolucency—presumably pathological] it is on the contrary large enough to be a vital argument in favour of thorough curettage and to explain many of the failures in clearing up systemic lesions, by extraction, when the operator has removed the teeth and ignored the adjacent infected tissue. During the last two years I have cultured about 3,000 granulomata removed under strict surgical asepsis with the open view procedure [the Novitzky technique], and practically no negative reports are shown. The predominating organism, as would be expected, is the streptococcus, mixed in many cases with staphylo-, diplo-, pneumo-, and micrococcus catarrhalis. This holds true of bone specimens taken from areas radiographically disclosed when remaining pathology has been suspected, and in many of which we have been able to check our diagnosis with old radiograms. The assumption is justified, therefore, that since granulomata are themselves infected tissue, and since apparently regenerated bone, displacing uncuretted masses, retains that infection, only complete extirpation will avoid the pathogenetic possibilities, and any method that will achieve this result is good practice."

Again (*Dental Cosmos*, 1921, p. 1009) he writes that:

"Cases are on record of areas of residual infection found existing twenty-five years after the removal of diseased teeth without curettage, and their elimination has greatly benefited their host."

In another paper in the *Dental Cosmos* (1923–4):

"The author, in an examination of over 1,100 radiograms of areas, many of them giving a history of past infection, previous to extraction, found 40 per cent. showing evidence of remaining pathologic condition. Inasmuch as these areas found in the site of past extraction, where no curettage or inadequate curettage has been done, practically invariably yield cultures of the pathogenic micro-organisms, and the bony structure found in these areas simulates in every way necrotic bone, we can but consider this prima facie evidence of the fact that the surgery is incomplete."

Shearer (*Journ. Amer. Dent. Assoc.*, 1924, p. 272), in an examination of 1,800 patients during twelve years, found 527 cases in which knife-edges of bone persisted along the alveolar ridge.

The medical practitioner who appreciates the influence of dead teeth and pyorrhoea teeth and their contribution to systemic and organic disturbances, and advises their elimination, may profitably bear the previous observations in mind and consider the following. After the age of 40, nine out of ten persons have infected teeth, and four out of five have pyorrhoea of some degree or other. Pyorrhoea teeth are encircled with an infected pyogenic degenerated dental ligament. The encasing bone is infected—in extreme cases to a depth of a quarter of an inch. Teeth that are removed by the ordinary pulling method in most instances only stir up the infection, leaving this just mentioned infected bone and infected pyogenic membrane behind. This is most frequently sealed in by the healed covering gum, while the infecting process continues undisturbed. The literature reciting experiences similar to those of Molt, Shearer, and Gardner, and supporting the same observations, is extensive.—I am, etc.,

London, S.W.19, Oct. 12th. Alonzo M. Nodine.

Medical Benevolence

Sir,—At the Royal Surrey County Hospital, when a death occurs in the person or the family of a member of the staff, we have recently adopted the practice of making a collection for a medical charity instead of sending a wreath, a notice to this effect being inserted in the report of the funeral in the local paper. This idea probably is not original, but hospitals which do not already carry it out might well do so, and benefit a deserving cause rather than the florist.—I am, etc.,

Guildford, Oct. 13th. G. H. Steele.

Sir,—I am sorry to strike a discordant note, but I must confess that the hardy annual appeal of Sir Thomas Barlow on behalf of the Royal Medical Benevolent Fund inspires me with a feeling more of irritation than of sympathy. I am irritated, not because Sir Thomas rattles his begging bowl under my nose so regularly, but because he should have to do so. Why in the name of all that is charitable, if the cause is a good one, should it have to be laboured so? As there is not a vestige of a doubt that the cause is a good one, why cannot the unfortunate of the profession be provided for with decency and comfort

once and for all, and we ourselves be spared this continual harrowing of our feelings with tales of want and distress?

It may seem rather ungracious to carp at the British Medical Asscciation for the part it has played, but I cannot help thinking that if the cause of the infirm and the needy had been fought with half the zeal of the fight for the odd sixpence on the capitation fee, this wretched tale of destitution would have drawn to a close long ago. If it is the desire of the profession to provide decently for its own poor—and there can hardly be any doubt of that—the problem is simply one of organization and the technique of money collecting. If results are anything to go by the present technique seems to fall lamentably short of perfection.

I have been a little surprised that in eighteen years' qualified life I have never once been personally approached and asked to subscribe to the fund. Postal appeals, circulars, and notices in the *British Medical Journal* there have been in abundance. But these are not much use. They have to compete on our breakfast tables with a heap of other more or less deserving appeals, and do nothing to secure a settled permanent income for the fund. It is the personal touch that gets the money.

I was once rash enough to think that, when some time ago panel practitioners agreed to a regular deduction from their pay, we could at last go to bed with easy minds. But no. Along come Sir Thomas Barlow and other kind-hearted people, cap in hand, disturbing our rest with the same tale of unrelieved distress as before. The technique I should suggest would be something as follows.

Subscriptions should be in the nature of a levy on the whole profession. It should be a fair levy. And to be fair it should be universal and in proportion to means, and as compulsory as public opinion can make it. The voluntary levy to which panel practitioners at present submit should be abolished. It is not quite fair, as those with small panels or no panels at all are not uncommonly better off than those with big panels. Then an undertaking, written if need be, should be obtained from every medical man in the country to contribute, say, one-fifth of 1 per cent. of his assessable income to the head-quarters of the fund. In every Divisional area of the British Medical Association one representative of the fund should be appointed—a person who should combine the suavity of an archdeacon with the persistence of a commercial traveller. He would be notified when a subscription was in arrears, and it would be his particular duty to see that it was paid. The task of winning over any residuum of obdurate or recalcitrant non-subscribers might be left to the persuasive eloquence of volunteers from that distinguished section of the profession, retired or otherwise, whose good fortune it is to have plenty of leisure. And I think I should make Sir Thomas Barlow tormentor-in-chief.

I cannot believe that anyone would object to this or some similar scheme. The amount raised, if everybody contributed, could be calculated to meet all needs; the present excellent but somewhat exasperating mendicancy could be silenced for ever, and yet the individual contribution would be so modest that not one of us need smoke a cigar the less. The medical profession, in spite of our many complaints, as a whole is well-to-do. The financial crash which beggared so many of our own social rank has turned none of us on the streets. It is a shame and a reproach on us that our colleagues in misfortune, who have the justest claim on our purses, should be dependent for their barest necessities on spasmodic appeals for our bounty.

Sir Thomas wants to give thirty shillings to each for Christmas! Surely this can be bettered. For any sake let some new scheme be set going so that we, the fortunate, who have never known want, can at least sit down to our own comfortable dinners without getting the taste of the orphans' boots and the widows' coals in the soup.—I am, etc.,

Uplwell, Wisbech, Oct. 9th. A. J. Hawes.

The Swab in Diphtheria Diagnosis

Sir,—Your correspondent Dr. E. James (*Journal*, August 4th, p. 230) asks: "How much longer is the swab to be relied upon in the diagnosis of faucial diphtheria?" After twenty-five years of experience as a pathologist in private practice I maintain that the following is sound advice in regard to the above question.

To begin with, everything depends on how the swab is taken. The swab itself must be made *secundum artem*. The wool must be tightly rolled on the stick, and the distal end should be fairly pointed. To use a loosely rolled plug of wool, to merely touch the suspected spot with the broad distal end thereof, is almost useless, because when attempting to inoculate the medium in the test tube that spread-out distal end most likely will not come into contact with the medium at all. With a properly made swab it is the side, not the tip, which is laid on to the suspicious spot; then the stick is given a vigorous twist whereby the entire lateral surface is brought into contact with the infected spot. Similarly, when the swab is brought into contact with the medium, the side of the swab (not the tip) is laid on at the bottom end of the tube, when, by means of a twist, and while dragging the swab along the surface of the medium, the entire lateral surface of the swab makes an intimate contact with it. Another fallacy lies in the fact that a certain amount of pluck and skill is required to touch the spot on the fauces, say, of a spluttering and coughing child. To turn one's head away, and to shut one's eyes for fear of being bombarded with the patient's splutterings does not lead to the obtaining of a satisfactory swab.

Another essential lies in the conveniences offered by the laboratory undertaking the examinations. The laboratory of a clinical pathologist, in private practice, must be open day and night, like the surgery of the general practitioner. If a throat swabbing arrives at 11 p.m., or any other time, somebody must be on the premises who has been trained to apply the swab correctly to the medium. A prompt report is then the next essential. The general practitioner must receive his report before 9 o'clock the following morning, before he starts his rounds, and this must include Sundays and holidays. Working under this scheme I have been able to give the following very definite advice to general practitioners. Any patient clinically seriously ill with a suspicion of diphtheria must be given antitoxin at once. When not seriously ill neither patient nor a household should be alarmed before the pathologist's report has been received.

In these days of keen competition and of general depression nothing damages a general practitioner's reputation more than to become known as an alarmist, apart from putting patients to the extra expense for antitoxin injections and causing the associated mental anxiety of the household concerned—especially if the patient happens to make a complete recovery within a day or two of the first symptoms.—I am, etc.,

Sydney, N.S.W., Sept. 12th. Alfred E. Finckh.

Sir,—The recent lengthy correspondence in your columns on "The Swab in Diphtheria Diagnosis" has dealt with many problems of the disease: two interesting points in particular were mentioned but not elaborated—namely, virulence and immunity. Dr. James suggests that carriers of organisms morphologically resembling the Klebs-Löffler bacillus may help to immunize the susceptible population; but what guarantee is there that such organisms, whilst being apparently harmless to their host, may not prove fatal to a person with less immunity or resistance? At the bedside of an "acute sore throat" it is important to assess three factors before prescribing any treatment:

(*a*) The type and virulence of the infecting organism, which only the swab can identify.

(*b*) The resistance and/or immunity of the patient, which may be indicated by his history. It seems scarcely necessary to emphasize the importance of the pulse rate in assessing the balance between this and the virulence of (*a*).

(*c*) The time factor, which may vary with differences of (*a*) and (*b*). We have all seen the fulminating cases, and also those which are moribund before the relatives send for a doctor. Incidentally I agree with Dr. ffolliott that these two types of case form the majority of fatalities, admitted to hospital or not.

These, then, are the primary criteria for the administration of antitoxin, and not the swab. The latter will be the only guide in cases where (*a*) appears to be low, (*b*) to be high, and (*c*) short. No harm will be done if antitoxin is given to streptococcal or spirochaetal (Vincent's) throat; on the contrary, it has been my experience that this form of non-specific therapy is often followed by immediate and dramatic improvement in such cases.—I am, etc.,

Greenford, Oct. 14th. ALISTAIR R. FRENCH.

⁂ This correspondence is now closed.—ED., *B.M.J.*

Publicity

SIR,—Where are we? When will any one of us, not of the shrinking dove type, find ourselves confronted with a charge of "advertising"? Dr. Abrahams has put his thumb down on a sore spot which is liable to become very sore indeed. . . .

Some of us, whether or not we are regarded as authorities, do get quoted in the lay Press. And why not? So far as I am aware, it does nobody any harm. Once upon a time I wrote you a very nice truthful letter. It was quoted in several lay newspapers, whereupon a raw carrot and onion juice practitioner made a most violent attack upon me. It was all very amusing: I got a lot of publicity; and no one was a ha'porth the worse. . . !

In my time I have been something of an authority on Regional Medical Officers, concerning whom I have written freely. My remarks have been referred to in the lay Press. And why not? The subject is a professional one; but also it is of considerable interest to that part of the public which is insured. I submit that my efforts were wholly beneficial. I am still friendly with R.M.O.'s, who, so far as I can make out, have become better, if not noticeably more humble, men.

I suggest that our Authorities should do a little fresh thinking, and consider once more the question of "advertising." We are all guilty of it. Every brass plate is an advertisement. Every hospital report contains advertisement. Most bulletins of the Great are advertisements. And they are all completely harmless. Are the matters to which Dr. Abrahams refers really harmful? I submit that they are not. Doctor affairs are "news"; and news will be printed whether we like it or whether we don't. Surely, then, it is desirable that it shall be presented truly instead of, as too often, in a garbled form. Professional methods have progressed: professional manners seem to have changed little since the days when Ambroise Paré was a young man. We still are over-much hampered by the Gentlemen of the Long Robe!—I am, etc.,

Walsall, Oct. 14th. FRANK G. LAYTON.

SIR,—With the excellent advice given by Dr. Adolphe Abrahams in last week's *Journal* (p. 699) there will surely be general agreement. As we needs must suffer, let us suffer with dignity and in silence. Equally, Dr. Abrahams commands our sympathy in the irritating telephonic inquiries thrust upon him by enterprising journalists. Occasionally it is possible to make an effective protest against these intrusions. Here are two personal experiences. Voice: "I am speaking on behalf of newspaper so-and-so, and in view of a recent inquest on a man who died while taking a hot bath after a full meal I want to know whether the medical profession considers such a practice dangerous to life." Reply: "I really could not pretend to say." Voice: "Would you be good enough to suggest a doctor as a specialist in such a subject?" Reply: "There is no need to ask a doctor, for the question can be settled by yourself. Thus, when you go home to-night have a really good dinner, then take a hot bath and see what happens!" Result: no more inquiries from that newspaper. Again, a sharp female voice: "I want to ask you a question about infant feeding." Reply: "I know very little about it." Voice: "But aren't you a Baby Specialist?" Reply: "No, madam, thank Heaven, I'm a full-grown man!" *Tableau.*—I am, etc.,

London, Oct. 16th. H.

Obituary

ROBERT J. GITTINS, M.D., M.R.C.P.

Pathologist to the Children's Hospital, Birmingham

We regret to announce the death on October 7th of Dr. R. J. Gittins, pathologist to the Children's Hospital, Birmingham. While attempting to save his young son from drowning in the River Severn, near Upton-on-Severn, he was himself drowned. Dr. Eileen Gittins, his wife, made a gallant attempt to rescue them, but they were dragged under by the strong current, and she could not reach them. Robert John Gittins was 39. A native of Birmingham, he was educated at the King Edward VI School and Birmingham University. He served in France during the war and won the Military Cross. In 1919 he returned to Birmingham, and in 1922 graduated M.B., Ch.B. He later took the M.D. degree and the D.T.M. and H., and became M.R.C.P. in 1930. In 1924 he went to India to take charge of the Friends Hospital at Itarsi, C.P. His wife was there with him as medical officer, and they did valuable work, not only at the hospital, but in connexion with welfare and social hygiene schemes over a wide area. They returned to Birmingham in 1929.

A senior colleague, L. G. P., sends the following appreciation:

Robert Gittins was one of a group of brilliant young paediatricians which during recent years has been associated with the Children's Hospital at Birmingham. Both he and his wife, who showed such wonderful bravery at the time of his accident, were students at the Birmingham Medical School, and spent five years in medical missionary work in India, where he came to realize the importance of pathological research and his own inability to carry it out satisfactorily. Returning to England Gittins devoted the remainder of his life to the study of the pathological aspects of paediatrics. He was appointed pathologist to the Children's Hospital in 1930, and so excellent was his work that in January of this year his appointment was confirmed on a whole-time basis. He carried out all the pathological work in the series of studies of anaemia which recently appeared in the *Archives of Disease in Childhood*, and was solely responsible for the work on leukaemia which has everywhere been regarded as a notable contribution to the cytology of the leucocyte. This work is marked by careful and accurate observations, and an attention to detail which was typical of the man. He was devoted to research, for he had a passionate desire for truth;

indeed, the desire dominated his whole life, and he was prepared to follow wherever the search for it might lead him, however difficult the course. This wholeheartedness brought him the affection of all who knew him well. He had a lively sense of humour, revelled in manly exercises, loved nature, the sea being perhaps his chief delight; indeed, on a series of week-ends he had sailed the boat from which he dived to his death from Padstow to Worcester. He was prepared to argue on either side on many controversial subjects, although tenacious even to a degree of obstinacy where principles were concerned. Nowhere did this character show itself better than in his championship of those in less favoured circumstances than himself, and it is not to be wondered at that his laboratory assistants would do anything for him. With all these things he was somewhat of a mystic, and his personal appearance bore out his spiritual characteristics, for he had those light blue eyes which appear to look far into the future and the fair hair of his Nordic ancestors. His last public appearance was in one of the series of post-graduate demonstrations at the commencement of the new session of the Medical School, when he spoke on pulmonary tuberculosis as a foe of little children. He felt strongly, even passionately, that the medical profession as a whole did not realize the deadliness of tuberculosis in childhood, and took every opportunity of trying to enforce this view. Two days later he gave his life in an unsuccessful attempt to save his second child from drowning. We who knew him realize how gladly he did this, and that he would have done it just as gladly for any child in like need. If he had lived Gittins would have gone from strength to strength, and would have been recognized as a great man in the sphere which he had chosen. His colleagues and friends and all who listened to the tributes paid to his goodness in the Friends Meeting House, Bull Street, Birmingham, on Friday last, know that by his life and death he had already achieved greatness; indeed, the manner of his being cannot better be described than in the words of those old Puritans who were his spiritual forebears: "So he passed over, and all the trumpets sounded for him on the other side."

> "Nothing is here for tears, nothing to wail
> Or knock the breast; no weakness, no contempt,
> Dispraise, or blame, nothing but well and fair
> And what may quiet us in a death so noble."

F. V. BEVAN-BROWN, M.D., M.R.C.P.

Physician to the Christchurch Hospital, New Zealand

Dr. Frederic Vivian Bevan-Brown, who died of uraemia at his home in Christchurch, New Zealand, on October 5th, was the second son of the late Mr. C. E. Bevan-Brown, the well-loved head master of the boys' high school of that town. On leaving school Dr. Bevan-Brown began his medical studies at Canterbury College, Christchurch, after which he came to London and entered Guy's Hospital as a student. He qualified in 1913, and proceeded to hold the posts of out-patient officer and house-physician at Guy's. At the outbreak of war he joined the R.A.M.C., remaining in that corps until after the armistice, and serving both on the Western Front and in Mesopotamia. On returning to Guy's Hospital he served as a medical assistant, and took the diploma of M.R.C.P. and the degree of M.D.Lond in 1930. He then returned to Christchurch, New Zealand, in which town he worked as a consulting physician up to the time of his final illness. He was honorary physician to the Christchurch Hospital, where his teaching was greatly appreciated by a long series of house-officers, and his medical services were of constant value to those under his care. His enthusiasm as a physician was an inspiration to all around him, and he contributed many original papers to local medical societies, the diseases of the thyroid gland and the relation between the psychic and physical sides of disease being his special study. He was closely connected with other medical institutions in his native town, such as St. George's Hospital, the Karitane Hospital, and the local branch of the St. John Ambulance Association. In addition to these activities, Dr. Bevan-Brown was a very active member of the Chapter of the Christchurch Cathedral, to which he was appointed lay canon some years ago.

His death, which occurred after a very brief illness, comes as a blow to his many friends both in New Zealand and in London; at the age of 46 he had achieved more than is permitted to many, and his enthusiastic optimism will be long remembered.

F. A. SAUNDERS, F.R.C.S.Ed.

Medical Superintendent, Prince Alfred Infirmary, Grahamstown

We regret to record the death, on August 26th, at the age of 76, of Dr. Frederick Anastasius Saunders, an outstanding personality of Grahamstown, Cape Province, and a member of the British Medical Association for nearly fifty years.

Born in London, he received his medical education in Edinburgh and at University College, Liverpool. In 1882 he obtained the diplomas L.R.C.P. and S., and in 1884 the F.R.C.S.Ed. After practising in Fifeshire he went out to South Africa in 1892, and started general practice in Grahamstown, where he remained until his death. He soon became renowned as a bold and skilled surgeon, and then, as medical officer of health for many years, achieved remarkable successes, abolishing slum properties and segregating lepers. In 1912 he was appointed medical superintendent of the Prince Alfred Infirmary. This was shortly after he joined the staff of the old Albany Hospital, and in two years had raised enough money to place it on a good basis. Elected to the British Medical Association in 1885, he was president of the Cape of Good Hope Eastern Province Branch in 1926–7.

From 1886, when he joined the Fife Light Horse, Dr. Saunders took an active interest in the Volunteer and similar movements. Three years later he obtained a commission in the West Yorks Regiment. In 1893 he was adjutant of the First City Volunteers, Grahamstown, and afterwards held various military appointments. He took part in the Boer War, receiving the Queen's medal with three clasps and the King's medal with two. He was finally honorary colonel of the 1st City Regiment, Grahamstown, and honorary major of the 3rd West Yorks Regiment. In Masonry he was district grand master of the Eastern Province, Scottish Constitution, 31st Degree. Outstanding characteristics were his forcible personality and abounding generosity. Apparently indefatigable, thanks to a fine physical constitution and enthusiasm for athletics, he took but few holidays. Industrious reading of new books and periodicals, as well as close comradeships with medical workers and friends in the Medical Association of South Africa, rendered post-graduate study unnecessary for him, and kept him fully up to date in his professional work. He was for some years honorary secretary of the Royal Society of Tropical Medicine and Hygiene of South Africa. Dr. Saunders attracted a large circle of friends, and actively supported the general interests of his adopted town, in which he did good work as a magistrate.

Dr. David Robert Powell-Evans, who died at his residence in Wimbledon on October 11th, had been a member of the British Medical Association for forty years, and had filled various offices. Born in 1862, he received

his medical education at Liverpool and Charing Cross Hospital, obtaining the diploma L.S.A. in 1890 and the M.R.C.S., L.R.C.P. ten years later. His early appointments included those of clinical assistant to the Samaritan Free Hospital for Women and Children, and to the London Throat Hospital. He started general practice in Wimbledon in 1891, and for some time was medical officer to Wimbledon Hospital. He was medical officer and public vaccinator to the North Wimbledon district of the Kingston Union. Dr. Powell-Evans joined the British Medical Association in 1892, and was a representative at the Annual Meeting of the Association in Birmingham in 1911. He was chairman-elect of the Wandsworth Division in 1912–13, Wimbledon appearing as the "Wimbledon Section" of the Wandsworth Division in the 1912 *List of Members*. In the following year he became chairman of the Wimbledon Division, the Division then belonging to the Metropolitan Counties Branch. He was vice-chairman of the Wimbledon Division of the new Surrey Branch in 1914–15, and chairman of the Kingston-on-Thames Division in 1925–6. A man of large sympathies and wide experience, he was popular with his colleagues and patients. A prominent hobby of his was golf, and he was one of the leading members of the Raynes Park Golf Club. He was a P.M. of the Chère Reine Lodge of Freemasons, and had been president of the Wimbledon Medical Society. Dr. Powell-Evans married twice, and leaves a widow and four sons, the eldest of whom succeeds him in his practice. He had expressed the wish that money which would have been expended on wreaths at his funeral should be sent to Epsom College, of which he was a life governor.

We regret to record the death, on October 11th in London, of Dr. James Crawford Craig, at the age of 56. Dr. Craig received the degree of M.A. at the University of Edinburgh in 1895, and, after holding the Grierson bursary in pathology in 1907, qualified M.B., Ch.B., with honours, a year later. He took the D.P.H. of the English Conjoint Board in 1910. Before settling down to general practice in London, Dr. Craig had held appointments as house-surgeon to the Royal Maternity and Simpson Memorial Hospital, Edinburgh, and surgeon to the Royal Buckinghamshire Hospital, Aylesbury. He was for some years clinical assistant at the Central London Ear, Nose, and Throat Hospital.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

Ernest Basil Verney, M.B., F.R.C.P., Sheild Reader in Pharmacology and lately Professor of Pharmacology at University College, London, has been elected into a Professorial Fellowship at Downing College. Frank Goldby, M.B., M.R.C.P., of Caius College, University Demonstrator in Anatomy, has been elected into a Fellowship at Queen's College.

The following candidates have been approved at the examination indicated:

Diploma in Medical Radiology and Electrology.—(*Part II*): J. D. P. B. Boyd, A. A. Dunlevy, M. Kahn, W. D. C. McCrorie.

UNIVERSITY OF LONDON

At its meeting on October 10th, with Lord Macmillan in the chair, the University Court was informed that the Surrey County Council, acting on the recommendation of its education committee, had decided to make a grant of £50,000, payable over ten years and subject to the approval by the County Council each year, towards the erection of the new university buildings in Bloomsbury. The Court also learnt of a grant towards the same purpose of £10 000, payable over ten years, from the Hertfordshire County Council. The Court has conveyed its most cordial thanks to the councils and education committees of Surrey and Hertfordshire for these munificent gifts; it has also accepted, with gratification, a donation from the Worshipful Company of Turners towards the ceremonial hall to be built on the Bloomsbury site.

The Semon Lecture

The Semon Lecture will be delivered on Thursday, November 1st, at 5 p.m., at the Royal Society of Medicine by Mr. Herbert Tilley, consulting surgeon to the ear and throat department of University College Hospital. His subject is "Inflammation of the Maxillary Antrum and other Accessory Sinuses (Some Clinical Manifestations of its Pathology)." The chair will be taken by Mr. W. M. Mollison, president of the Laryngological Section of the Royal Society of Medicine.

UNIVERSITY OF SHEFFIELD

The Council of the University at its meeting on October 12th received the resignation of Professor Graham Simpson from the chair of surgery, and of Mr. H. B. Yates from the lectureships in surgical anatomy and surgical pathology, and the tutorship in surgery. Mr. Ernest F. Finch, M.S., F.R.C.S., was appointed to the chair of surgery.

UNIVERSITY OF DUBLIN

School of Physic, Trinity College

The following candidates have been approved at the examination indicated:

Final Medical Examination.—(*Part I, Materia Medica and Therapeutics, Pathology and Bacteriology*): M. R. W. Spacek (passed on high marks), S. E. M'Connell, R. F. Cantan, H. FitzG. Sloan, S. H. Morrison, D. P. Beckett, Margaret Perry, H. Elliman, P. L. van Aardt, D. H. A. Irwin, J. M'Quillan, J. R. Shapiro, R. S. MacL. Cooke, H. W. W. Good, N. J. Smith, C. Eppel, A. E. B. de Courcy Wheeler, N. Jackson, Eithne M. O'Connell.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

Bradshaw Lecture

The Bradshaw Lecture on "Haemochromatosis" will be delivered by Dr. J. H. Sheldon at the College, Pall Mall East, S.W., on Thursday, November 1st, at 5 p.m.

FitzPatrick Lectures

Sir Humphry Rolleston will deliver the FitzPatrick Lectures on the "History of the Endocrine Organs" at the College on Tuesday and Thursday, November 6th and 8th, at 5 p.m.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

A quarterly council meeting was held on October 11th, with the President, Sir Holburt Waring, in the chair.

Mr. L. R. Broster was admitted a member of the Court of Examiners.

Mr. F. J. Smith, late of Bristol Grammar School, was admitted the fifth Macloghlin Scholar.

Mr. W. R. L. Harrison of Epsom College was nominated as the forty-second Jenks Scholar.

It was reported that the Sir Gilbert Blane Gold Medal for 1934 had been awarded to Surgeon Lieut.-Commander T. C. H. Neil, R.N.

Mr. F. W. Bentley was reappointed Bernhard Baron Scholar for a further period of six months.

A diploma of Fellowship was granted to Mr. J. B. Pennybacker (Edinburgh).

Diplomas of Membership were granted to Norman Angel (Birmingham), R. C. F. Catterall (Cambridge, and University College), G. B. Davis (King's College), and C. Ratnayaka (King's College).

The following appointments were made for the Primary Fellowship Examination to be held at Madras, beginning on December 27th: Lieut.-Colonel K. G. Pandalai (Assessor in Anatomy), Major S. L. Bhatia (Assessor in Physiology), and Professor P. K. Koshy Avargal (Superintendent of Dissections).

The Council adopted the annual report to Fellows and Members, which will shortly be circulated to those who have expressed a wish to receive it.

WELSH NATIONAL SCHOOL OF MEDICINE

The new laboratories of materia medica and pharmacology in the department of preventive medicine at the Welsh National School of Medicine were opened on October 12th by Sir William James Thomas, donor of the building. On the evening of the same day Professor G. Grey Turner, M.S., F.R.C.S., delivered the opening address for the new session.

Medico-Legal

BUSINESS RELATIONS BETWEEN DOCTORS*

GOODWILL. AGREEMENTS TO REFRAIN FROM PRACTISING

The subject of goodwill and restrictive agreements is important not only to partners but also in every other working relationship between doctors. It is discussed here because it follows logically on a discussion of the relation of partnership, but it belongs equally to every other section of this article.

In a commercial business, carried on with the object of manufacturing or selling goods, the goodwill may be as tangible an asset as the firm's capital. Long ago, in Crutwell v. Lye (1810), Lord Eldon said that the goodwill which had been sold by a certain firm was nothing more than the probability that the old customers would resort to the old place. Later decisions have given the word a much wider meaning, and in Trego v. Hunt (1896) Lord Macnaghten said that the goodwill was often the very sap and life of the business, without which it would yield little or no fruit ; it was the whole advantage of the reputation and connexion of the firm, which might have been built up by years of honest work or gained by a lavish expenditure of money. In Hill v. Fearis (1905) Mr. Justice Warrington said that goodwill was the advantage of being entitled to represent oneself as carrying on a business which had been carried on for some time previously. The name of the firm in a commercial business usually has a definite money value. For instance, it is obvious that for a company manufacturing biscuits the right to call itself Messrs. Huntley and Palmer would be worth many thousands of pounds. For this reason, in the very improbable event of Mr. Huntley and Mr. Palmer dissolving their partnership, neither would be entitled to continue selling biscuits as Messrs. Huntley and Palmer without paying the other his share of the value of this privilege. Moreover, if Mr. Palmer decided to start in business by himself, and sold his share of the goodwill to Mr. Huntley, he would not be entitled by law directly to solicit customers of the old firm to deal with him, and so take advantage of the connexion and his knowledge of it, but must behave as a complete newcomer into the market.

The goodwill of a medical practice is, on the contrary, a purely personal one, depending almost entirely on the confidence which the patients repose in the partner himself. A medical firm does not advertise ; it is not known by a trade name ; and it cannot, ethically at any rate, solicit custom. The goodwill consists in the partners' individual connexion, and when a doctor buys a practice or a partnership he merely buys an introduction, an exclusive recommendation and the exclusion of the seller. The goodwill, in the legal view, has no realizable value. If one partner, who has paid a premium, withdraws before the date fixed for the expiration of the partnership he may possibly be able to claim back a part of the premium corresponding to the unexpired term, but this is only what he has paid in order that he may share in the profits. True, the profits could not be earned without the goodwill, but he is not considered to buy with his premium goodwill, but only the opportunity of earning and sharing profits.

When the partnership expires the goodwill is not an asset which can be sold and divided among the partners. If a partner dies his representatives cannot claim anything as his share of the goodwill ; the survivors need not retire from practice in order to make the goodwill saleable. They may make what subsequent use of it they please, provided they do not make use of the ex-partner's name. It is, however, always open to partners to agree beforehand that the goodwill shall have a saleable value, and in any event if the goodwill has actually been sold by anyone in a position of trust the proceeds can be successfully claimed by anyone who has a just right to them.

For instance, in Smale *v.* Graves (1850) the widow of a dentist was made executrix of his will. She sold the goodwill and an introduction for £500, which she claimed to keep as arising from her personal influence with the patients. The court held that some, at any rate, of this money belonged to the estate.

In Corbin *v.* Stewart (1911) the widow of a medical man, who had not taken out letters of administration and therefore was not acting on behalf of the estate, sold the practice. She used those words in her receipt for part of the purchase money. Her purchaser defaulted and she sued for the balance. Mr. Justice Scrutton, as he then was, considered that she was entitled to sell the right to carry on business in the house, which was her own, but if she was selling the right to say "I am Dr. C's successor" he was inclined to think that part at any rate of the proceeds of the sale of this right belonged to the estate.

Covenants not to Practise

The value of the connexion to a purchaser will therefore depend very largely upon whether the original practitioner, or any of the members of a dissolved partnership, continue to practise in the neighbourhood. When a partnership is dissolved the law will not restrain any of the ex-partners from continuing to practise. A partner who has been expelled or who has withdrawn from the partnership and has been repaid his share of the capital will not, unless he has entered into an agreement to the contrary, be restrained from carrying on business on his own account. It follows that when a doctor buys a practice from a retiring colleague, or a partner leaves the partnership, or an assistant or locumtenent finishes his term of service, the value of the connexion will be seriously depreciated if the outgoing practitioner remains in the district and continues to practise, for the patients who have been consulting him will probably continue to do so. For this reason every agreement to purchase a practice, every partnership agreement, and every contract with an assistant or locumtenent should contain a legaliy binding clause restraining the outgoing party from continuing practice near by. The clause must be drafted by a solicitor with special experience, or the chances are that it will be quite worthless. The fundamental fact about such covenants is that the law originally refused to enforce them at all, holding that they were contrary to public policy, and even now the courts insist that the outgoing practitioner shall not be restricted any more closely than will secure the legitimate interests of those who are continuing to practise.

To make an agreement in restraint of trade valid two conditions must be satisfied: (1) the party who is to be restricted must receive some benefit by way of consideration (something valuable, that is, in return for the freedom he is renouncing) ; and (2) he must not be restricted more than is reasonably necessary, at the time of making the contract, to ensure that the party who gives the consideration gets the freedom from competition for which he is paying. The mere fact that the doctor is employing the assistant is considered a sufficient benefit to the assistant to constitute consideration for a restrictive covenant (cf. Davis *v.* Mason). The restriction, to be reasonable, must obviously be limited in space, for it will not hurt the buyer of a practice if the seller goes and practises a hundred miles away. It can, however, still be reasonable even if it is unlimited in time, for it protects (at least in England) not only the buyer himself but also anyone to whom he sells, assigns, or bequeaths the practice, and is, in fact, an asset—part of the goodwill. A medical man (at least in England) is still bound by such a covenant even if the other party or his successors have ceased to practise, for the reasonableness of the restriction is determined at the time it was made, and nothing that happens later can affect it.

Size of Restricted Areas

The size of the area within which the buyer can reasonably demand to be protected varies according to the nature of the practice. The courts have upheld agreements not to practise within ten miles of Thetford and of Newton (Montgomery)—small country towns—and even within

* The first of these articles, by a legal correspondent, appeared on June 9th, 1934 (p. 1053), the second on June 23rd (p. 1145), the third on July 7th (p. 42), the fourth on July 21st (p. 141), the fifth on September 22nd (p. 574), and the sixth on October 6th (p. 660).

twenty miles of Aylesbury. This last case was heard as long ago as 1818, and such a condition would presumably be equally valid to-day, when distances are so much shorter. In London, distances of two and a half and three miles have been held reasonable (Atkyns *v.* Kinnier, *infra*). An agreement not practise as a surgeon-dentist in London has been held reasonable. On the other hand, when a dentist agreed not to practise within 100 miles of York, the condition was held to be unnecessarily wide for the protection of the other party to the agreement (Horner v. Graves, 1831). Unless the method of measurement is stated, the distance is measured " as the crow flies."

The peculiar danger of these covenants is that if by some mistake the area within which an outgoing practitioner binds himself not to practise is too wide, the whole restriction is invalid and the outgoing practitioner is at liberty to practise anywhere. Suppose an assistant to a Halifax doctor agreed not to practise in the West Riding of Yorkshire, and afterwards broke his agreement by practising in Dewsbury ; if the courts considered that the West Riding was an unreasonably large area they would hold the restriction invalid as against public policy, and then there would be nothing to prevent the ex-assistant from coming to Halifax and setting up in practice next door to his late principal. The court will not fix a fresh limit. A more frequent source of trouble is faulty framing of the restrictive clause so that it does not entirely prevent the seller, ex-partner, assistant, or locumtenent from competing. One of the commonest errors of drafting is to forbid the seller to " set up in practice " within a certain radius. If the buyer, under this condition, goes out one morning and finds the ex-owner of the practice calling on some of his old patients at their invitation he has no redress. In order to be safe the restraining cause must prohibit the seller, etc., from doing any act at all in the capacity of a registered medical practitioner within a given reasonable area for a given time. One firm of solicitors with a large medical connexion advises, in London agreements, a double restriction: the outgoing party agrees not to set up in practice, or to practise, within a given small radius—usually one mile—and also that he will not profitably attend upon, advise, or prescribe for a patient who was previously a patient of the practice within a much wider radius, usually twenty miles. The small radius, while legally unobjectionable, gives ample protection against competition for future patients, and the large radius is obviously reasonable for the specific protection of the existing practice.

The words "practising the profession of a medical man" will probably cover every kind of competing activity.

Two medical men, on dissolving partnership, drew a line on a map and agreed not to " exercise or carry on the practice, profession, or business of physician, surgeon, or apothecary at any place within the boundaries of the partnership practice " north and south of the line respectively. One of them attended patients at their own residences on the wrong side of the line and the other sued him. Counsel argued that " practising " in an area meant opening a surgery or having consulting rooms in it, but the court held that the doctor practised his profession every time he attended a patient, and that the patient's house was a " place " within the meaning of the restraining clause.

When a practitioner binds himself not to practise within given limits, a condition that he shall also not live within certain limits is reasonable if it is connected with the covenant not to practise, and is necessary to protect the interests of the other party.

In Atkyns *v.* Kinnier (1850) a surgeon, K, entered into partnership with another, A, for three years, and promised that at the end of that time he would not practise or reside within two and a half miles of No. 28, Dorset Crescent, " measuring by the usual streets or public ways of approach thereto," and that if he should break this condition he would pay A £1,000. After the end of three years A sued K on the grounds that his house in Southwark was within two and a half miles of 28, Dorset Crescent. At the trial it appeared that K's house was more than two and a half miles away if the distance was measured by the public thoroughfare most frequented by carriages, but if measured by another public thoroughfare along which carriages seldom passed the distance was a few feet under two and a half miles. There was no evidence that K had done A any damage whatever by living where he did, but the court found that the contract was broken and ordered K to pay the £1,000. The Exchequer Chamber—corresponding in those days to the Court of Appeal—supported the judge in holding that the condition that K should not *reside* within two and a half miles was not unreasonable, as a person might reasonably guard against a harmless act in order to prevent an injurious one which might easily follow from it. As the covenant not to practise was legal and binding, and the covenant not to reside was connected with it, this was legal and binding also.

The court has also held reasonable a condition that the retiring practitioner shall not let his house to a medical man. When a retiring practitioner binds himself not to carry on medical practice he is also bound not to act as assistant to a person who does so (Palmer *v.* Mallet, 1887).

Restrictive Covenants in Scotland

In Scotland the courts have sometimes regarded a restrictive covenant as a purely personal agreement which is not assignable to a successor. In Rodger *v.* Herbertson (1909) H sold his practice to A and agreed that A, his heirs, executors, and successors should have the exclusive right to the practice and the goodwill, and that he himself would cease to practise in the neighbourhood. A assigned the practice and the agreement to R, but when R brought an action to prevent H from practising in the neighbourhood the Court of Sessions held that the contract was personal and intransmissible, and that the term "successor" had no meaning. In this case, however, the court found that certain terms of the contract disclosed *delectus personae* (an exclusive personal reference) as regards the purchaser A, so as to suggest that the agreement was binding on H only with respect to A. Lord Dunedin, the President of the Court, expressly stated that there was no general rule, and that each case must depend upon its own terms and on the just construction of the bargain between the parties. Lord Wark, commenting on this case in an opinion delivered in Cunningham *v.* Forsyth (1933), dissented from the dictum of Lord Kinnear that in a medical practice there is nothing to assign but a personal goodwill, and that this can hardly be assigned except on considerations personal to the assignee. Although, he said, a medical man may sell his practice only to a person in whom he has confidence, and show by the terms of the contract that he has done so, yet in Cunningham *v.* Forsyth the practice was sold to the first comer by the representative of a doctor under legal disability. It was, he said, a little difficult to see why a restrictive covenant binding the doctor's son not to compete with this first comer should not be transmissible to any practitioner to whom the first comer should sell the practice. There did not, in fact, seem to be any element of *delectus personae* about the transaction. The position is probably, therefore, that even in Scotland a doctor selling a practice to a colleague can, if he makes it quite clear in the agreement that he is doing so, legally bind himself not to compete with any successor of that colleague. Friendly societies and other bodies sometimes insist that their medical officer shall bind himself not to practise in the neighbourhood after his engagement with them is ended. Such covenants have been upheld by the courts.

The courts accept the ordinary covenant not to practise afterwards as a necessary part of every agreement between two doctors who wish to work together, but as soon as two competing doctors try to make a similar arrangement they reject it as contrary to public policy.

Collins *v.* Locke (1879) concerned stevedores, not doctors, but the same principle would probably apply to medical practice. Four stevedores in Melbourne made a kind of " ring." They agreed to divide the stevedoring business of the port on the footing that each one should do the work on a certain list of shipping firms ; if one took a job from a firm " belonging " to another of his colleagues he should compensate that colleague ; and if at any time one could not get a particular job from one of his own firms, none of his colleagues should take it. The Privy Council held that the condition by which a party who did work allotted to another should compensate him was fair and reasonable, because each party in turn might benefit by it and the merchant interested in the ship could have his work done by the party whom he wished to do it. The court would not, however, enforce the other clause

—that which provided that if one party was not given the work, none of the parties should take it. This clause, it said, restrained three out of the four parties without giving any of them any profit or benefit to compensate for the restriction, which was also detrimental to the public because it deprived merchants of the services of any of the parties unless they employed a particular one, against whom they might have a perfectly reasonable objection. Their Lordships said that the clause was entirely beyond anything which the legitimate interests of the parties required.

It is therefore practically certain that if two doctors who lived in the same district made an agreement by which each should take certain patients and that neither should attend a patient belonging to the other, the courts would refuse to enforce their bargain. An agreement to allot certain streets or villages to one doctor exclusively would probably be open to the same objection. The courts are very jealous of the public interest in enforcing any agreement in restraint of trade or practice. If, however, a number of doctors agree that, whichever of them does the work, certain doctors shall receive the fees from patients in certain districts, the bargain would be held good at law, because each of the parties would stand to benefit in turn and the agreement would not in any way restrict the services available to the public.

Liquidated Damages

The condition by which a doctor agrees not to practise within a certain area generally includes a covenant that, if he does practise within that area, he shall pay a stipulated sum of money as "liquidated damages." This means that the parties agree that if the covenant is broken this sum shall represent the damage which the owner of the practice has suffered. If the clause expresses that the offender shall pay a certain sum as a penalty for breaking the agreement, then the sum is a penalty and the aggrieved practitioner can only recover a sum equal to the damage he has actually suffered. The courts will not necessarily, whatever the wording of the agreement, award such a sum either as liquidated damages or as a penalty, but will take all the circumstances into consideration. The decisions to be found in the reports suggest that the sum named will only be treated as liquidated damages if it represents a genuine estimate of the damage which the owner of the practice is likely to suffer if the outgoing doctor remains in the neighbourhood. If the sum is obviously disproportionate, the court will not make the offender pay it all; if the sum seems fairly proportionate, it probably will. The aggrieved practitioner can ask the court either to grant an injunction preventing the outgoing doctor from breaking his restrictive covenant or to award damages for the breach, but not both. A practitioner who succeeds in obtaining an injunction will not be allowed to sue afterwards for liquidated damages, and if he is granted damages the outgoing doctor will be perfectly at liberty to practise in the district as long as he likes. The owner can, however, sue both for an injunction and for unliquidated damages—that is, the actual amount of damage that he can persuade the court he has suffered. A doctor who has agreed not to practise on pain of liquidated damages cannot simply offer the amount of the damages and set up in practice.

If the owner of a practice suddenly discovers that one of his old assistants or ex-partners has started to practise in the neighbourhood in defiance of his agreement not to do so, he should lose no time in instructing his solicitor to apply for an injunction. The court will, if he makes out a good case, grant an interim injunction without hearing the other side, and this will protect the practice until the case is tried or for a definite time fixed by the court. If the offender has really infringed the covenant, the court will not refuse an injunction merely because the actual damage has so far been trifling. It is dangerous to delay in these cases, for courts of equity are apt to take the view that if a suitor does not ask for their help in reasonable time he cannot be in any great need of it. The injunction is a most effective remedy, because if the offender disobeys it he can be promptly imprisoned. It is a very different matter from trying to get damages out of an evasive debtor.

Medical News

Lord Moynihan will open the extension of the Samaritan Free Hospital for Women, Marylebone Road, London, N.W., on Tuesday, November 13th, at 3 p.m. It is twenty-seven years on November 23rd since Sir Frederick Treves formally opened the new operating theatre, and referred to the perfecting of the methods of certain operations particularly associated with the Samaritan Free Hospital and Sir Spencer Wells.

On Monday, November 5th, a banquet will be held at the Mansion House in support of the appeal of St. Bartholomew's Hospital Medical College for funds for the purchase and equipment of the site and buildings in Charterhouse Square acquired last year. The Lord Mayor, in a special appeal to the City of London, explains that £65,000 is needed to pay off the balance of the purchase price, £40,000 to alter and equip the existing buildings formerly occupied by Merchant Taylors' School, and £30,000 to build and equip a residential hostel for students. The College authorities have already raised £65,000, and they own a building which it is hoped to sell for £20,000. The new College must be ready for occupation before the opening of the winter session 1935–6. H.R.H. the Prince of Wales, President of St. Bartholomew's, has given his personal support to the launching of this appeal.

A reception will be held at the Royal Society of Medicine on Thursday, November 8th, at 8.30 p.m., when Fellows and their friends will be received in the library by the President and Mrs. Robert Hutchison. At 9.15 p.m. an address (in English) will be given by Professor Arturo Castiglioni, entitled "The Ancient University of Padua and its English Scholars." Admission will be by ticket only.

The annual dinner of the Leeds School of Medicine will be held at Queen's Hotel, Leeds, on Thursday, November 15th. Particulars may be obtained from the secretaries.

The Buckston Browne annual dinner of Fellows and Members of the Royal College of Surgeons of England will be held in the College, Lincoln's Inn Fields, on Thursday, November 8th, at 8 p.m. This dinner, provided through an endowment by Sir G. Buckston Browne, F.R.C.S., has been held regularly since 1928. Those present usually number about a hundred, and at least half of the guests are members of the College.

An address, on "Sir James Paget at Home," will be given by Bishop H. L. Paget on Friday, October 26th, at 8.45 p.m., at the Princess Elizabeth of York Children's Hospital, Shadwell, E.1. Professor G. Grey Turner will occupy the chair. Admission free, without ticket.

After the meeting of the Cambridge Medical Society on Friday afternoon, October 26th, at Addenbrooke's Hospital, Dr. G. S. Haynes will unveil the Arthur Cooke Memorial Plaque. By arrangement with the Cambridge and Huntingdon Branch of the British Medical Association, all members of the Branch are entitled to attend the meetings of the Cambridge Medical Society, which count as clinical meetings of the Association.

A meeting of the Medico-Legal Society will be held at 11, Chandos Street, W., on Thursday, October 25th, at 8.30 p.m., when a paper will be read by Dr. Ainsworth Mitchell on "The Use of Invisible Rays in Criminology," followed by a discussion.

A meeting of the St. John's Hospital Dermatological Society will be held at St. John's Hospital, 49, Leicester Square, W.C., on Wednesday, October 24th, at 4.15 p.m., when clinical cases will be shown.

A course of three lectures on "Forty Years of Gynaecological Endocrinology" will be given by Professor Ludwig Fraenkel, late director of the Women's Clinic in the University of Breslau, at University College Hospital Medical School, University Street, W.C., on October 31st and November 2nd and 5th, at 5.30 p.m. Professor F. J. Browne will take the chair at the first lecture. Admission free, without ticket.

A course of eight lectures on "Psychology and Modern Problems" will be given at the Institute of Medical Psychology, Malet Place, W.C., on Tuesdays from October 23rd to December 11th, at 6 p.m., with the exception of the lecture on October 30th, which will commence at 5.45 p.m. The fee for the course is £1 1s., and tickets may be obtained in advance from the honorary lecture secretary; tickets for single lectures, obtainable at the door, are 5s. each.

The programme for the ensuing session of the Eugenics Society has now been published. On October 30th Professor H. Muckermann will discuss "The Eugenic Movement in Germany"; on November 20th Mr. Herbert Brewer "Eutelegenesis"; and on December 18th Dr. Shepherd Dawson "Disease and Intelligence." The meetings will be held in the rooms of the Linnean Society, Burlington House, Piccadilly, at 5.15 p.m., with Sir Humphry Rolleston in the chair; tea at 4.45. All interested in the subjects mentioned are invited to attend.

A post-graduate course on diseases of children will be held at the Great Ormond Street Hospital, W.C., from October 22nd to November 4th, from 10 a.m. to 1 p.m. and 2 p.m. to 4 p.m.; Saturdays 10 a.m. to 1 p.m. The course, the fee for which is £6 6s., will consist of fifty clinical lectures and demonstrations, and six laboratory demonstrations. Applications to take the whole course, or any part thereof, to the secretary of the hospital.

The Fellowship of Medicine (1, Wimpole Street, W.) announces that lecture-demonstrations will be given at 11, Chandos Street, W., at 2.30 p.m. on October 23rd and 30th. The first lecture in the series, on diet and dietetics, will be given at 11, Chandos Street, on October 24th, at 8.30 p.m., by Professor R. J. S. McDowall. A week-end course in diseases of the chest will be held at the Hospital for Consumption, Brompton, on October 27th and 28th. Other forthcoming courses include neurology, at the West End Hospital for Nervous Diseases, October 29th to November 3rd; obstetrics, at the City of London Maternity Hospital, November 3rd and 4th; medicine, surgery, and gynaecology, at the Royal Waterloo Hospital, November 5th to 24th; diseases of the chest, at the Victoria Park Hospital, November 5th to 10th; urology, at St. Peter's Hospital, November 5th to 17th. Courses of instruction, clinics, etc., arranged by the Fellowship are open only to members.

The Italian Congress of Industrial Medicine, which, as stated in our issue of October 13th (p. 705), was to have been held at Turin from October 20th to 22nd, has been postponed to the 25th to 27th.

The fifth Rumanian Congress of Surgery will be held at Bucarest during the first ten days of November under the presidency of Professor I. Bacalesco, when the following subjects, among others, will be discussed: surgery of cholelithiasis; surgical treatment of uterine prolapse; osteosynthesis; genital actinomycosis; and surgical treatment of facial paralysis. Further information can be obtained from Dr. J. Jiano, rue Campineanu 62, Bucarest.

The annual general meeting of the Guild of St. Luke, St. Cosmas, and St. Damian will be held in the Committee Room, Cathedral Hall, Archbishop's House, by permission of the Cardinal, on Sunday, October 21st, immediately after the High Mass at Westminster Cathedral, which will be celebrated at 10.30 a.m. Front seats will be reserved on the Epistle side.

On October 12th Mrs. Charles H. Marshall and Mrs. E. M. Field of New York attended the naming of the "Josephine B. Marshall" pathological laboratory at the West End Hospital for Nervous Diseases. The Bishop of Willesden performed the ceremony, and the Earl of Harewood presided. The late Mrs. J. Marshall was a great benefactress of the hospital, and for ten years, until her death in 1933, she was a member of the committee of management. Mr. and Mrs. Charles Marshall and Mrs. Field gave £3,200 to enable the laboratory to be named after her.

Under the auspices of the Standing Conference of Metropolitan Borough Tuberculosis Care Committees an exhibition and sale of work made by students attending handicraft classes at tuberculosis dispensaries in London will be held next week at Carpenters' Hall, Throgmorton Avenue, E.C. There will be two opening ceremonies, the first on Wednesday, October 24th, at 3.30 p.m., by the Lord Mayor, and the second on the following day at the same hour by Lord Snell, chairman of the London County Council, after which Sir Henry Gauvain will give an address. Tea will be served during both afternoons (price 1s.), and working demonstrations will be given. Invitations and further particulars may be had from the honorary secretary, Mrs. William Brand, "Pembury," The Drive, Rickmansworth, Herts.

Rural housing in Wales and tuberculosis in cattle will be discussed at a sessional meeting of the Royal Sanitary Institute in the Pier Pavilion, Colwyn Bay, on Friday, October 26th.

In the year ending August 4th, 1934, in eighty-six large towns in the United States, 23.3 persons per 100,000 inhabitants were killed by motor accidents, as compared with 21.1 persons in the previous year.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

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QUERIES AND ANSWERS

Hospital Wards

Dr. Sidney Clarke (St. Albans) writes: There is a tendency for architects at present to build hospital wards with beds parallel to the windows in place of the usual head to wall. Is this more costly, and does the arrangement lead to increased work? Some sisters are said to view the system with little favour. Would anyone, please, who is familiar with such wards give any information as to the advantages and disadvantages of such arrangements?

Chronic Bone Sinus

Dr. Clement Belcher (Birmingham) writes with reference to the inquiry by "A.B.C." (September 29th, p. 617): With a deep sinus of such long standing it is questionable if closure would be in the interests of the elderly patient, there being the probability of dead bone for which the sinus gives drainage. I have a similar case, but this is a tuberculous osteitis, not a staphylococcus infection, as is usual, I believe, in acute osteomyelitis cases. This patient has been under my care for forty-five years, and for the last forty has had a bone sinus. In 1890 his right foot was amputated for a tuberculous ankle-joint which troubled him for five years. He then developed a focus in his right elbow, but never would he have another operation. During all this long period he had had treatment every week, first as a "club," then as a panel patient. His

treatment consists of light dressings soaked in boric acid lotion with zinc sulphate and ammon. picrate solution; this has kept the elbow-joint useful. I have removed on several occasions a small sequestrum, but he has carried on his employment as a leather worker all these years, and is still at work at the age of 69.

Income Tax

Cost of Assistant's Board, etc.

"Spes" has claimed £150 per annum as the cost of the board and lodging of his indoor assistant. The inspector points out that the cost of a surgery maid and one-half of the rent, rates, and light and heat are already claimed and allowed as professional expenses.

⁂ Though much must depend on the facts of the particular case it does seem that there is not much of the element of "lodging" to be claimed for by "Spes," seeing that it has to be covered by the "lodger's" share of *one-half* of the rent, etc.—the rent and rates not already allowed amount to £56 per year only. In the circumstances we suggest that a personal visit to the inspector's office might lead to a reasonable compromise.

Income from Dominions

"A. R." is resident in one of the Dominions, and has a private income on which he pays tax there of about £120 per annum. What would he pay if he resided in England?

⁂ Assuming "A. R." to be married, but not entitled to "child" or other special allowances, his tax here would be:

	£	s.	d.
On the first £150		*nil*	
On the next £175 at 2s. 3d. in the £... ...	19	13	9
On the balance of £675 at 4s. 6d. in the £ ...	151	17	6
	£171	11	3

Less Dominion income tax relief, which in the circumstances would represent apparently about half the above amount, leaving "A. R." in the position of paying £120 plus, say, £85 = £205, less any relief he might obtain from the Dominion authorities.

Employment of Wife

"J. G." explains that he has "paid his wife £25 a quarter for years," and "the work she does is worth at least £45 a year," which is all he claimed. The inspector of taxes has refused the claim on the authority of a decision in the case of Thomson *v.* Bruce.

⁂ The allowance of £45 in respect of the earned income of the wife presupposes that the wife's earnings have been assessed. "J. G." does not state whether he returned his wife's "income" for assessment. That was one of the points in the case cited. Another was that accounts had been lodged which did not show the wife's wages as paid out of the business receipts. The question is really one of fact—that is, it is for "J. G." to prove (*a*) that he did pay wages to his wife for the work she did in the practice, and (*b*) that he has been assessed in respect of her earnings.

LETTERS, NOTES, ETC.

The G.P.'s Nightmare

To those who may have had similar dreams, this one of Dr. J. Vergely's may bring the comfort of a fellow-sufferer. We translate it from the *Journal de Médecine de Bordeaux*, 1934, xxv, 681.

I have had a frightful dream. I distinctly saw coming towards me a man with his flesh flayed and large tears running from his eyes. In spite of this horrible mutilation, he walked and spoke without difficulty. When he reached the place where I was, he stopped and made a sign that he wished to speak with me. "Who are you?" I asked. "Who am I?" he replied. "I am the last survivor of a disappearing race, one which, when I am gone, will become completely extinct. . . . I am a practitioner of general medicine. No doubt you are surprised to see me in such a sorry state, but it is all the fault of those specialists. They have taken everything from me, even my skin, bit by bit. As you see, they have left only my eyes, so that I can weep. Ah! how magnificent was the life I used to lead, and who would have said that I should come to this? But, let me tell you, my condition was not always so deplorable. When I began the practice of medicine I was, if not exactly rich, at least properly clothed; and I tried my best to care for suffering humanity. Up to the time of the war things went on in much the same way. True there were already specialists. Besides the surgeons and, within their ranks, the genito-urinary surgeon, the gynaecologist, and the orthopaedic surgeon, there were also the obstetrician, the dermatologist, the oto-rhino-laryngologist, the dentists, the radiologists. But that was almost all, and these specialties seemed to us to be justifiable. But since the war! Ah! my good sir, there have sprung up the foot specialists who have taken our feet from us, the cardiologist the heart, and the tuberculosis experts who, under the guise of this disease, have stolen all the maladies of the lung. I will not refer to the paediatric physicians, more wildly specialized than before, nor to the neurologists or the psychiatrists, who speak a language which becomes more and more esoteric. Then there are the specialists for rheumatism, lymphatism, and much else besides; and the last thing I heard of was that there were specialists for diseases of the vessels and for endocrine disorders. I tell you truly that they have taken everything from me, bit by bit, and have left me only my eyes to weep with. Ah!" he cried, striking his chest, "I will go and specialize in unknown diseases."

Treatment of Trichophyton Infection

"M.D." writes: The difficulty in effecting a cure of trichophyton infection of the fourth interdigital spaces of the feet has recently been alluded to. The experiences of a sufferer may be of assistance. For several years I have persevered with a number of treatments, often for several months each. All have failed to produce improvement with one exception. Cignolin (Bayer) grains x in benzol ʒi is the exception. A solution of silver nitrate, *x* rays (1/4 pastille on one occasion, 1/2 pastille on another), Castellani's fuchsine paint, chrysarobin ointment (8 per cent.) have all proved completely ineffective. Whitfield's ointment, containing salicylic acid grains xx and benzoic acid grains xxv to an ounce, applied nightly on pledgets of cotton-wool, produced almost intolerable smarting and a marked extension of the disease, so that the whole interdigital skin, up to the tips of the affected toes, became white and infected. Cignolin alone has produced improvement; but of cure I begin to despair.

Lethal Noises

Dr. W. J. Burns Selkirk (Birmingham) writes: In reading Dr. Dan McKenzie's paper on "Noise and Health," in the *Journal* of October 6th (p. 636), I recollected two curious instances of the effect of noise given in Hudson's book, *A Hind in Richmond Park*. (1) A baby died as a result of an explosive sneeze by another person in the room. (2) A man had so loud a voice that when, in temporary forgetfulness, he shouted loudly at his ox the ox fell dead. I think the sudden shriek of the whistle of a passing railway engine can cause fits of terror in a baby for months afterwards.

Medical Golf

The autumn meeting of the Sussex Medical and Dental Golfing Society was held on the course of the Dyke Golf Club, Brighton, on September 30th, when twenty-eight members were present. The weather was fine and warm, although there was a strong wind. The morning round, for the captain's prize (presented by Dr. A. E. Drynan), against bogey resulted in a win for Dr. H. Butcher with a score of 2 up; M. W. Pilcher was second (1 up), and the prize for the sealed holes was won by Dr. J. M. Anderson. In the afternoon the competition took the form of a four-ball foursomes against bogey, resulting in a win for Drs. Bond and Devlin (4 up), the runners-up being Drs. J. Thwaites and J. K. Raymond, who tied with Drs. G. Thwaites and A. E. Drynan, with 2 up.

George Newnes Limited announce the publication, in fortnightly parts, of a popular work entitled *An Outline of Modern Belief*, by J. W. N. Sullivan and Walter Grierson.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 47, 48, 50, 51, 54, and 55 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 52 and 53.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *212*.